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(Replaces May 1974,
which may be used.)

# Disaster Planning Guide

## FOR BUSINESS AND INDUSTRY

DEFENSE CIVIL PREPAREDNESS AGENCY

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# INTRODUCTION

Industry and government share responsibility for protecting lives and property. Preparedness helps avoid or minimize loss of lives and property and can help assure continuity of production which is so important to the recovery of an area after a disaster, or to this country if we should be attacked.

Every industrial facility should be prepared to cope with the hazards and disasters of today's complex world. Storms, fires, explosions, sabotage, civil disturbances, and possible nuclear attack all pose continuing threats.

Coordinated planning with your local civil preparedness director should assure provisions for the fullest use of community resources as needed. Mutual assistance agreements with other industrial facilities provide insurance for use in emergencies. These are your basic keys to community preparedness.

Industrial preparedness is essential for peace time safety and for the security of the Nation. This guide has been written with this in mind. I urge you to read it and act upon its recommendations.

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# DISASTER PLANNING GUIDE FOR BUSINESS AND INDUSTRY

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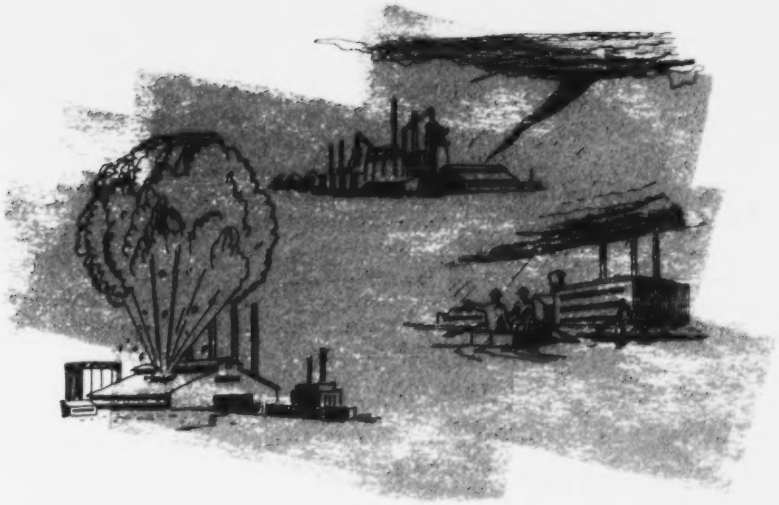
# I



# Are You Ready for Disaster ?

Is your plant ready for disaster? How should you prepare? What kinds of natural disasters might occur? — Floods? — Hurricanes? Man-made disasters? Explosions? Nuclear attack? — These are only a few of the questions which must be answered in order to develop and implement an effective industrial defense plan.

Each industrial plant, bank, office building, institution, or other large facility must be evaluated in terms of disasters most likely to occur, the effects of disaster upon the facility, the facility's capacity to cope with and minimize those effects, and the effects on dependent facilities wherever they may be located.

In analyzing and assessing the vulnerability of individual plants and other facilities, you must consider environmental, indigenous, and economic factors. These are bases for:

1. Estimating the likelihood of damage, either by direct effects or by indirect effects resulting from dependency on a plant damaged elsewhere.
2. Making plans for protective measures within individual plants or complexes of plants, to minimize damage and casualties.

As an example of an environmental factor in determining vulnerability, a plant may be endangered because of proximity to other plants, or port facilities, location within or near a large population center, and possibility of being in a high-density fallout area.

Plants also may be vulnerable due to indigenous factors such as lightweight construction; use of processes or materials which in themselves would be hazards or which might generate hazardous byproducts; storage of combustibles such as lumber; floor layout and arrangements such as crowding of equipment; use of highly critical equipment, such as machine tools; the critical skills of employees; inadequate exits for rapid clearance of buildings; lack of shelter areas; and limited evacuation routes.

Economic factors include criticality of product; exclusiveness of product; (i.e., where the plant is the only one of its kind); or stockpiled or reserve materials.

Any plant or facility is vulnerable to some extent. Analysis of plant vulnerability to disaster can provide the basis for developing a practical, workable, emergency operations plan for your plant.

In the remainder of this chapter, various types of disasters which can occur are presented in two categories: Natural and man-made.

## NATURAL DISASTERS

For planning purposes, it must be assumed that most disasters considered likely will arrive with very little warning, have a rapid development, and have a potential for substantial destruction.

The likelihood that the kinds of natural disasters cited in this chapter would ever strike your company may be very small; but you should plan to deal with all the following:

1. Forest Fires
2. Hurricanes
3. Floods
4. Tornadoes
5. Winter Storms
6. Earthquakes

## FOREST FIRES

Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. An uncontrolled fire is one of the most destructive forces caused by nature or by man. It is a multiple killer of people, livestock, fish, and wildlife. It can destroy property, timber, forage, watersheds, recreational facilities, and scenic values. Severe soil erosion, silting of stream beds and reservoirs, and flooding often are the legacy of uncontrolled fire.

Responsibility for fire protection on Federal lands is centered primarily in the Department of Agriculture, the Department of Interior, and to a lesser degree in such agencies as the Department of Defense and the Tennessee Valley Authority. The States have recognized their responsibilities on State and private forest lands through passage of numerous laws, and have set up State forest agencies to protect these resources. In many instances, private interests have established their own fire control organizations. As the protection of natural resources often transcends property and State lines, strong ties of coordination and cooperation have developed among private, local, State and Federal agencies.

In addition to training and equipping their own fire department personnel for brush and forest firefighting, plants near forest areas should consider such activities as fire prevention programs, obtaining fire weather forecasts from the National Weather Service, and development of mutual-aid compacts with other plants, adjacent communities, and private agencies. Employees can be trained and equipped to fight forest fires without much cost in time and money. Plant fire departments can provide the nucleus of a force that can prevent, detect, or suppress forest fires before they reach the disaster stage.

## HURRICANES

The National Weather Service is responsible for issuing warnings when hurricanes appear to be a threat to the U.S. mainland.

As soon as there are definite indications that a hurricane is forming, even though it is a thousand miles or more from the mainland, the storm is given a name and the Weather Service begins issuing "advisories." The advisories are issued frequently throughout the day and night and tell where the storm is located, the intensity of its winds, and speed and direction of movement.

If a hurricane moves toward the mainland, hurricane watch notices are included. A hurricane watch does not constitute a warning that hurricane conditions are imminent, but rather indicates that the hurricane is close — and that everyone in the area covered by the watch should listen for further advisories and be ready to take precautionary actions.

As soon as the forecaster determines that a particular section of the coast will feel the full effects of a hurricane, he issues a hurricane warning. Hurricane warnings specify coastal areas where winds of 74 m.p.h. or higher are expected. When the warning is issued, all precautions should be taken immediately against the full force of the storm.

## FLOODS

Except in the case of flash flooding, the onset of most floods is a relatively slow process — with adequate warning. The buildup usually takes several days. Progressive situation reports are available from NOAA, the National Oceanic and Atmospheric Administration, through its Weather Service River Forecast Centers and River District Offices.

Flash flood warnings are the most urgent type of flood warnings issued. These are transmitted to the public over radio and television. They should be transmitted also through local warning systems, by means of sirens, horns, or whistles; through telephone alerts; or by means of police cars using loudspeakers.

If your community has a history of recurring floods, the community's minimum requirement is to establish continuing communication with the National Weather Service. For example, flood forecasts and warnings should be telephoned to the local police headquarters, or some other centralized facility, at agreed-upon periods. During the flood-control planning phase, communities should coordinate closely with the nearest office of the U.S. Army Corps of Engineers, in accordance with established State procedures. Also, the Corps of Engineers can provide preventive assistance for flood control as authorized under Public Law 99.

## TORNADOES

Tornadoes are violent local storms with whirling winds of tremendous speed that can reach 200-400 m.p.h. The individual tornado appears as a rotating, funnel-shaped cloud which extends toward the ground from the base of a thundercloud. It varies from gray to black in color. The tornado spins like a top, and may sound like the roaring of an airplane or locomotive. These small, short-lived storms are the most violent of all atmospheric phenomena; and over a small area, are the most destructive.

The width of a tornado path ranges generally from 200 yards to one mile. They travel 5 to 50 miles along the ground, at speeds of 30 to 75 m.p.h. Tornadoes sometimes double back or move in circles; and some have remained motionless for a while before moving on. They have struck in every State, but the principal areas of frequency are in the Middle Plains and Southeastern States.

Because tornadoes are highly localized and recurring in some areas, it is recommended that plants in areas prone to tornadoes participate in a *Tornado Watch System* built around a local emergency service (usually the local police department).

The National Weather Service is responsible for issuing weather warnings to the public. Severe weather warnings are issued, using the following terms: *Severe Thunderstorm* indicates the possibility of frequent lightning and/or damaging winds of greater than 50 m.p.h., hail 3/4-inch or more in diameter (about the size of a dime), and heavy rain; *Severe Thunderstorm Watch* indicates the possibility of tornadoes, thunderstorms, frequent lightning, hail, and winds of greater than 75 m.p.h.; *Tornado Watch* means that tornadoes are expected to develop; and *Tornado Warning* means that a tornado has actually been sighted in the area, or is indicated by radar.

## WINTER STORMS

Winter storms vary in size and intensity. A storm may affect only part of a State or many States, and may be a minor ice storm or a full-blown blizzard.

### Prestorm-Season Preparations

1. Organize mobile emergency rescue and medical teams, if these would be useful in your area.
2. Contact your local government or the National Weather Service and learn winter storm warnings that pertain to your area.
3. Publish winter storm safety rules in the plant newspaper.
4. To determine their capability to assist under varying winter storm situations, and to what extent, contact other plants, and—through your local civil preparedness agency—military units and installations, Civil Air Patrol units (CAP), amateur radio operators and organizations (e.g., RACES), and private organizations and associations.
5. Determine location and amounts of snow fencing available, and of sand and salt. Obtain and position supplies as required.
6. Designate snow emergency routes and place identifying signs within the yard areas of the plant.
7. Establish a system for "employee-stay-home" announcements.

## EARTHQUAKES

Earthquakes are unpredictable and strike without warning. They may range in intensity from slight tremors to great shocks; and may last from a few seconds to as much as 5 minutes. They could come in a series over a period of several days. The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Most casualties result from falling materials. Quakes can disrupt power and telephone lines, and gas, sewer, or water mains. They may also trigger landslides and generate tidal waves.

*During the Shaking* employees should be warned to (1) Stay indoors if already there; (2) take cover under sturdy furniture such as work tables; (3)Stay near the center of the building; (4) Stay away from glass windows and doors; and (5) not run through or near buildings where there is danger of falling debris. If employees are outside, they should stay in the open, away from buildings and utility wires. *After the Shaking* employees should stay out of damaged buildings; the aftershock can shake them down. Plant officials should check utilities. If water pipes are damaged or electrical wires are shorting, they should be turned off at the primary control point. If gas leakage is detected, the main valve should be shut off, windows opened and the building cleared until utility officials say it is safe.

## MAN-MADE DISASTERS

All progressive employers and employees think in terms of on-the-job safety, and most plant managers have taken steps to assure some degree of plant security. However, a foolproof system of safety and security has yet to be devised. It is the responsibility of management to plan for possible breakdowns in their systems.

Potential disasters caused by man should be included when developing your company emergency plan. The following are discussed in this chapter:

1. Plant Fires
2. Chemical Accidents
3. Transportation Accidents
4. Public Demonstrations/Civil Disturbances
5. Bomb Threats
6. Sabotage
7. Radiological Accidents
8. Nuclear Attack

## PLANT FIRES

The most important aspect of plans for coping with major plant fires is development of mutual assistance agreements with local governments, other plants, and nearby Federal installations. Fire control methods and techniques vary widely in different parts of the country, as well as between the

various fire protection agencies. It is difficult to prescribe standard procedures. Plant fire organizations generally develop plans and procedures over the years to meet various fire hazards.

Smaller plants usually cannot afford to maintain the standing forces required to meet a major fire situation, so they rely on local government services and mutual aid. To be effective in cases of large fires, industrial explosions, and forest fires, mutual aid requires good communications, accessibility to the fire scene, prearrangements for use of apparatus and manpower, and centralized command.

The biggest single need usually is not manpower and equipment. Most often it is the ability to respond quickly and to confine the fire to manageable limits before it reaches the disaster stage. This calls for a prefire plan of action for mutual aid response by existing local fire organizations. Where such plans exist at the time of a large fire, the emergency usually is manageable, with life and property loss held to a minimum.

## CHEMICAL ACCIDENTS

Several thousand chemicals in daily use can cause a plant emergency which would affect a substantial number of employees and others in the neighborhood of the plant. These effects could include massive contamination of a community, explosions, and fires. The U.S. Department of Transportation is responsible for regulating the movement of hazardous chemicals; and hazardous chemicals being transported interstate must be labelled with appropriate words of identification and caution.

Plant officials should be extremely careful in the use of hazardous chemicals in all plant processes and productions, and should be aware of their use in neighboring plants. Care should be taken to post throughout the plant the location, hazardous properties, and characteristics of individual chemicals, and their potential hazardous reactions to each other.

Plant emergency coordinators and safety personnel should be familiar with the following sources of technical information on chemical hazards:

National Fire Protection Association,
60 Batterymarch Street,
Boston, Mass., 02110

Publications:

No. 49—Hazardous Chemicals Data
No. 325—Properties of Flammable Liquids, Gases and Volatile Solids
No. 491—Manual of Hazardous Chemical Reactions.
No. 704M—Fire Hazards of Materials

Manufacturing Chemists Association,
1825 Connecticut Avenue, N.W.
Washington, D.C. 20009

Chemical Safety Data Sheets

Transportation Emergency Information "Chem-Cards"
(These cover specific chemicals moved in tank motor vehicles which possess flammable, oxidizing, corrosive, poisonous, and other hazardous properties.)

Marine Emergency "Cargo Information Cards"
(These are carried in the pilot house of a vessel towing tank barges, and on the barges. The information of these cards includes the hazards of chemicals and recommendations on handling fires, chemical leaks, and human exposure threats.)

National Agricultural Chemists Association
1155 - 15th Street, NW
Washington, D.C. 20005
(Members of this Association have a network of more than 40 safety teams nationwide prepared for prompt cleanup and decontamination of poison pesticides involved in a major accident.)

Association of American Railroads,
Bureau of Explosives,
1920 L Street, NW.,
Washington, D.C. 20036.

Publications:

B.E. Pamphlet No. 8A, Dangerous Articles Emergency Guide
B.E. Pamphlet No 22, Handling Collisions and Derailments Involving Explosives, Gasoline, and other Dangerous Articles
B.E. Pamphlet No. 29, Procedures for Handling Special Atomic Energy Commission Shipments

## TRANSPORTATION ACCIDENTS

Almost every plant is exposed daily to the possibility of air, automobile, railroad, or shipping accidents in or near its boundaries. Plant officials should be prepared to handle the type of problems they will have to face if their plant has a major transportation accident.

Since not all plants have the same exposure nor the same resources to handle such emergencies, it is recommended that each plant develop its own plan of action—including agreements on giving and receiving mutual aid. Local plans should include listings of the type of equipment or services needed, the source and location of the equipment or services, the person or point of contact to give or obtain immediate response to an emergency request, and the means and method of compensating (if appropriate) for the use of the equipment or services in an emergency.

Major transportation accidents often cause chemical spills, fires, explosions, and other results, which call for special operations, such as rescue and evacuation. Usually, transportation accidents affect only relatively small areas and involve only a small number of people.

An airplane crash may create the need for firefighting and other operations in the area of impact.

An automobile crash involving buses or carriers of hazardous cargoes can involve substantial rescue, firefighting, and evacuation operations.

A railroad accident can produce hazardous situations when it occurs in or near plants — particu-

larly if the cargo is flammable or explosive. This can also involve substantial rescue, firefighting, and evacuation operations.

Regardless of the type of transportation accident, the first consideration should be to save lives. This can be accomplished through quick response and coordination of the plant emergency services and local police, fire, and medical services.

When a transportation accident involves chemicals or other hazardous materials, the appropriate plant Emergency Services Action Checklist should also be used (e.g., "Chemical Accidents," "Radiological Accidents").

## PUBLIC DEMONSTRATIONS/CIVIL DISTURBANCES

Recent years have seen a variety of demonstrations for different purposes in many locations throughout the country. Some demonstrations develop slowly, allowing the authorities to assess the problem, and to conduct negotiations with the organizers and arrange for control measures. On other occasions, violence may flare up with little advance notice. But even these incidents usually are preceded by earlier indications of a buildup of tensions and pressures.

In a situation which is developing slowly and deliberately, plant officials may operate during the preliminary or negotiating phase out of their regular offices, calling in staff directors as required, and routinely circulating information to departments concerned.

In a situation where there is a sudden eruption of violence, accompanied perhaps by attempted arson and assaults, plant security personnel usually will be involved initially and will serve as the source for information regarding the characteristics and extent of the disturbance. Their intelligence-gathering capability, coupled with that of local police agencies, generally will provide the information needed to make appropriate decisions.

## BOMB THREATS

Compared with other plant emergencies, the covert and criminal nature of bombing incidents make bomb threats a highly complex problem for plant management and emergency service personnel. Consequently, prior planning to meet the threat should include contact with a nearby military Explosive Ordnance Disposal Detachment, and with the local or neighboring city police department — particularly if it has a bomb disposal unit. Arrange to obtain the assistance of experienced personnel.

Since there may be some question in regard to the participation of nonplant manpower in handling dangerous explosive materials which are the responsibility of plant officials, consideration must be given in advance to "going it alone," if necessary. Therefore, training programs for plant specialists in handling improvised explosive devices should be utilized when they are available through Military Explosive Ordnance Disposal Control Center, and/or Law Enforcement Assistance Administration (LEAA) programs.

Experience shows that over 95 percent of all written or telephoned bomb threats are hoaxes. However, there is always a chance that a threat may be authentic. Appropriate action should be taken in each case to provide for the safety of employees, the public, and property; and to locate the suspected explosive or incendiary device so it can be neutralized.

While the responsibility for action rests primarily with the police department, this will be affected to some degree by other persons involved. For example, the plant manager must make the decision whether or not to evacuate the building after a bomb threat has been received, and where to send the people who are evacuated. Also, whether or not people who work in the threatened building, and who know what does or doesn't belong in or near the building, should conduct the search for a suspected bomb.

If the object is located and thought to be a bomb, and the local police cannot dispose of it, the services of a bomb disposal unit previously arranged for should be requested.

## SABOTAGE

No plant is immune to sabotage. However, the types of targets for sabotage usually can be predicted with reasonable accuracy. The saboteur will generally look for a target that is critical, vulnerable, accessible, and at least partially conducive to self-destruction. Saboteurs in general are enemy agents, disgruntled employees who commit sabotage for revenge, or individuals who are mentally ill or have been duped by enemy propaganda.

The methods of sabotage may be classified as follows:

1. *Chemical*—the addition or insertion of destructive or polluting chemicals.
2. *Electric or Electronic*—interrupting or interfering with electrical or electronic processes or power, and jamming communications.
3. *Explosive*—detonating explosive materials, or damaging or destroying by explosives.
4. *Incendiary devices*—ignited by chemicals, electrical or electronic or mechanical means, or any ordinary means of arson.
5. *Mechanical*—Breaking or omitting parts, using improper or inferior parts, or failing to lubricate or maintain properly.
6. *Psychological*—Inciting strikes, boycotts, unrest, personal animosities; or causing slow-

downs, or work stoppage by excessive spoilage or inferior work.

The prevention of sabotage may be accomplished by reducing target accessibility and vulnerability. This may be done by allowing only authorized access to the potential target; screening and placing employees in accordance with security requirements; designing, constructing, and modifying equipment with built-in protection against sabotage; conducting continuing education of employees on prevention of sabotage; and having a plan with organization and procedures for handling potential or actual sabotage.

## RADIOLOGICAL ACCIDENTS

The widespread and rapidly increasing industrial and commercial use and transportation of radioactive materials has increased the possibility of radiological hazards resulting from accidents involving these materials. Accidents may occur in facilities where radioactive materials are used or processed, or during transportation.

In the event that plant and local emergency services are not adequate to cope with the situation, Federal assistance can be requested by calling an Atomic Energy Commission (AEC) office or a military service installation. In accordance with an Interagency Radiological Assistance Plan, the radiological emergency response capabilities of Federal agencies can be used to protect the public health and safety, or to assist organizations or individuals needing immediate radiological emergency assistance.

Coordinated by the AEC, men and equipment are available around-the-clock to assist on request at the scene of all kinds of radiological incidents believed to require capabilities beyond those available locally.

Special emergency response capabilities have been established by the AEC and Department of Defense for coping with accidents involving nuclear weapons and so-called peaceful nuclear explosives.

When a radiological incident occurs in a plant, some degree of immediate response by State and local public safety personnel usually will be required. Initial action may be by plant and local fire or police personnel first at the scene of the incident.

## NUCLEAR ATTACK

The blast and heat effects of nuclear weapons, while similar in nature to conventional weapons, are enormously greater in power, and pose the added threat of radioactivity. The effects of nuclear weapons differ from those of conventional weapons in the following principal ways:

1. Nuclear explosions may be many thousands (or millions) of times more powerful than the largest conventional detonations. An experimental nuclear device exploded at Amchitka, in the Aleutian Islands, in November, 1971, had an estimated yield of more than 5 megatons (MT), which means it released more energy than the explosion of 5 million tons of TNT. Larger devices have also been tested by several nations.

2. A fairly large proportion of the energy in a nuclear explosion is emitted in the form of light and heat, generally referred to as "thermal radiation." This is capable of causing skin burns and of starting fires at considerable distances. The nuclear explosion also releases a burst of highly penetrating and harmful invisible rays called "initial nuclear radiation." The initial radiation effect is overshadowed by blast and fire effects which can cause almost total destruction within a radius considerably larger than that affected by initial nuclear radiation.

3. A nuclear detonation also produces an electromagnetic pulse (EMP), sometimes called "radioflash," which, under proper conditions, can affect large areas. The bulk of EMP energy lies within the radio frequency spectrum (ranging from powerline frequencies to radar system frequencies). EMP is electrical in nature and is crudely similar to the waves radiated by local lightning or a broadcast station. This pulse is easily picked up by any conductive material, damaging any electrical or electronic equipment connected to this material.

4. If a nuclear explosion occurs at or near the ground, great quantities of radioactive earth and other materials are drawn upward to high altitudes. The radioactive particles can fall back to earth over a period of several hours, over a wide area. This phenomenon is known as "fallout," and particles emit what is called "residual nuclear radiation."

Figure 1 shows the distribution of energy in the explosion of a typical nuclear weapon.

Figure 2 shows the effects of 5- and 25- megaton surface nuclear blasts, respectively.

Figure 3 shows sample radioactive fallout patterns.

## RADIOACTIVE FALLOUT

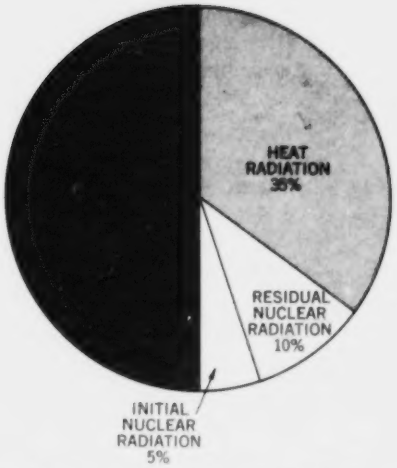
Fallout particles emit principally alpha, beta, and gamma radiation. Gamma radiation is the one which most concerns civil preparedness planners, as it cannot be detected by any of the human senses; and is highly penetrating, and harmful to living cells. Gamma radiation can be detected and measured only with special instruments. It is measured in units called Roentgens (R).

For exposed persons, a dose of more than 200 R over a short period of time could cause disabling illness and some deaths. At 450 R, there would be a 50-50 probability of death; and few persons would survive a dose of more than 600 R.

In a nuclear air burst (one in which the fireball does not touch the ground), debris is not present to lend weight to the radioactive particles produced, so they stay aloft for a long period of time. As they eventually return to earth, their radioactivity will have diminished to a harmless level.

In an all-out nuclear attack against U.S. military, industrial, and population centers, severe to moderate damage from the *blast* and *heat* effects would occur in about 2 percent of the Nation's area. In addition, radioactive fallout could be expected to spread over about 75 percent of the land area of the United States, in varying intensities, contaminating many places for periods ranging from hours to weeks—with potentially fatal or disabling effects on the population.

Although the direct effects of a large-scale nuclear attack could cause millions of casualties, other millions of Americans could survive the radiation effects by seeking protection in fallout shelters.

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# II

# National Civil Preparedness

The basis of the national civil preparedness program is to save lives and protect property in disaster—whether the disaster is man-made or natural.

The most catastrophic of man-made disasters, a nuclear attack, poses a continuing threat to national survival and therefore, is of primary concern to the Defense Civil Preparedness Agency (DCPA). However, the Federal effort also includes providing State and local governments with advice and guidance to assist them in organizing and preparing to meet the effects of other disasters.

## PLAN FOR DISASTER

Approximately 4,400 local governments throughout the United States participate in civil preparedness planning and preparations, in varying degrees. These local governments are responsible for the health and safety of approximately 90 percent of the U.S. population.

Priority emphasis is being given by DCPA to On-Site Assistance, a procedure to provide specialized assistance to improve the emergency management and operating capabilities in local communities.

Coordinated planning between business and industry and local government is essential to community safety, and to individual facility emergency operations.

## NATIONAL SHELTER PROGRAM

The Federal Government conducts a continuing nationwide survey to identify fallout shelter space available in existing public and private buildings and other structures, such as mines, caves, and tunnels. The survey identifies fallout shelter areas that have:

1. Sufficient protected space to accommodate at least 50 people.
2. A minimum of 10 sq. ft. of floor space per person.
3. An adequate supply of fresh air.
4. A radiation protection factor of at least 40 (radiation intensity inside shelter would be only 1/40th that immediately outside).

Since 1962, DCPA has encouraged inclusion of radiation protection design in all new buildings. The goal is fallout shelter for all, wherever they may be at the time of an attack.

Not all industrial buildings with adequate shelter can be designated for use as public fallout shelters. For example, the structure may be located in an area that has more than enough public fallout shelter with higher radiation protection factors. In another instance, operations carried on within the facility may constitute hazards that preclude use by the public in an attack emergency.

Industrial shelter plans should be coordinated with those of your local civil preparedness agency.

As a result of the National Fallout Shelter Survey, millions of shelter spaces have been located in existing buildings. Many of them are ready for use by the public if necessary. However, additional shelter spaces are needed. DCPA has,

therefore, undertaken the following additional measures to provide them:

- A home fallout protection survey has been conducted in cooperation with the Census Bureau in many States to identify additional shelter spaces in one-, two-, and three-family houses. More than 25 million homes in the Nation have basements which could provide a substantial amount of fallout protection. In addition, a method has been developed that permits a householder to evaluate his own home, in a crisis.

- A professional development program has been developed to enable architects and engineers to develop a capability for radiation protection design and analysis. This capability is available in many architectural and engineering firms. DCPA has published a "National Directory of Architectural, Engineering, and Consulting Firms with Certified Fallout Shelter Analysts" (FG-F-1.-3). This is available from local civil preparedness agencies.

- Advisory service in radiation-protection design techniques is available to architectural and engineering firms, as well as building owners. This service may be requested through State or local civil preparedness agencies. In the design of new buildings or in modifications and additions to existing ones, increased fallout radiation protection can often be provided at little or no additional cost. These techniques, which enhance the fallout protection inherent in the structure without adversely affecting the building's appearance or its intended use, are generally applicable in the design of new buildings or major expansions or modifications of existing structures. The service is provided through seminars, recommendations based on review of design plans, or personal consultation at no cost to the architect or owner.

- A community shelter planning (CSP) program designed to match people to the best protected shelter spaces available both to public shelters locally available and other suitable space; to see that everyone knows where to go and what to do in case of nuclear attack; to define areas in which more shelter is needed; and to serve as a basis for local action to develop additional shelters, and for periodic updating of local emergency plans.

## RADIOLOGICAL MONITORING SYSTEM

Radiological monitoring is a necessary adjunct to the national fallout shelter system. Radiological monitors are trained and equipped to detect and measure radiation hazards following a nuclear attack.

The nationwide radiological monitoring capability consists of several thousand Federal, State, and local monitoring stations with trained personnel, located at fire and police stations, airports, hospitals, and the field offices of Federal agencies.

## NATIONAL WARNING SYSTEM

To carry out warning responsibilities, the Federal, State, and local governments have established, and continue to maintain and operate, a nationwide warning system.

The Federal portion, which serves the continental United States, is called the National Warning System (NAWAS). It operates three National Warning Centers, manned 24 hours daily by attack warning officers, and utilizes thousands of miles of private-wire telephone circuits that link the warning centers with more than 1700 warning points, extensions, and backup installations that serve all of the States and their principal political subdivisions.

The National Warning Center is located in the North American Air Defense Command (NORAD) Headquarters in Colorado Springs, Colorado, where information concerning impending attack would be made immediately available. Two alternate warning centers at Denton, Texas, and Olney, Maryland can assume the functions of the National Warning Center if necessary.

NAWAS warning points are strategically located throughout the continental United States. Since NAWAS operates on a 24-hour-a-day schedule, NAWAS warning points must be manned continuously. For this reason, State and municipal police stations and fire stations are generally selected as warning points. In addition, operating personnel at these locations are already trained and accustomed to handling messages of an emergency nature. Most NAWAS warning points are responsible for warning an area assigned to them by the State. In addition to the dissemination of warnings, they are responsible for providing DCPA regional headquarters or warning centers with flash information concerning nuclear detonations, initial damage estimates, fallout, downed aircraft, natural disasters, and similar incidents.

In every State, one NAWAS warning point is selected as the State Warning Point and is assigned responsibility for control of NAWAS within the State. The State Warning Point is also responsible for relaying emergency information to the appropriate DCPA regional headquarters.

Extensions from NAWAS are available to State and local civil preparedness authorities. These extensions provide direct warning to those locations that cannot qualify as NAWAS warning points, yet are considered by State and local governments as important terminals in their warning systems. In Hawaii, the warning system extends to two warning points by telephone, and from there by radio to warning points in Guam and American Samoa. In

Puerto Rico the warning system extends to four warning points, including one in the Virgin Islands.

The State portions of the civil preparedness warning system have been established by the respective States to relay warnings received over NAWAS to locations in political subdivisions not served directly by NAWAS.

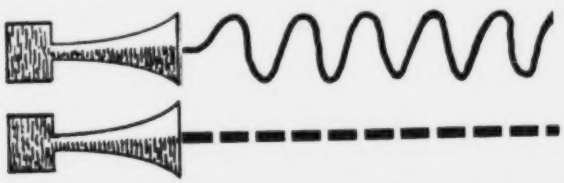
Facilities used for relaying warnings differ from State to State. Most States use public service radio systems; i.e., police, highway, and similar departmental networks. Others use telephone, teletype, or special systems such as bell-and-lights. County sheriff radio nets are generally linked to the State systems and spread the warning through their areas of jurisdiction.

Local warning systems consist of the facilities used to alert local government officials, institutions, industrial facilities, schools, etc., and devices to warn the public; e.g., sirens, horns, or whistles. Your industrial plant should work with your local government to insure that warning of impending disaster or nuclear attack is received in time to implement the protective actions described in your emergency plans.

## WARNING AND ALERT SIGNALS

An Attack Warning signal and an Attention or Alert signal have been established by DCPA:

THE ATTACK WARNING SIGNAL.—This is a 3- to 5-minute wavering sound on sirens, or a



series of short blasts on whistles, horns, or other devices, repeated as necessary. The Attack Warning Signal means that an actual enemy attack against the United States has been detected, and that *protective action should be taken immediately*. This signal has *no other meaning*, and will be used for no other purpose.

THE ATTENTION OR ALERT SIGNAL: This is used by some local governments to get the attention of citizens in a time of threatened or impending natural disaster, or some other peacetime emergency. This signal is a 3- to 5- minute steady sound on sirens, or with whistles, horns, or other devices.

In most places, the Attention or Alert Signal means that local government wants to broadcast important information on radio or television concerning a peace-time disaster.

## EMERGENCY BROADCAST SYSTEM

The Emergency Broadcast System (EBS), composed of non-Government radio and television stations, is designed to transmit emergency Presidential messages, or national, State, or local area news, information and instructions to the public in a broad range of emergency contingencies.

The EBS may be activated by the President to address the public in a major emergency, or its facilities may be used on a State- or area-wide basis by participating broadcasters to transmit instructions in day-to-day emergency situations posing a threat to life and property. These latter may include tornado warnings or sightings, flash flood warnings, threats from major fires or industrial accidents, developing severe weather conditions and the like.

EBS stations periodically conduct tests of emergency procedures and instruct the public on actions to be taken to tune in on EBS in an emergency.



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# III

# Planning for Continuity of Industrial Management

Leadership and direction are necessary first elements in the successful conduct of all emergency programs. It is therefore essential that plans and measures be developed and adopted which will be effective in the event of an attack or other major disaster; and which, to the maximum extent feasible, would assure that continuity of business and industrial leadership and direction is readily available in the immediate postattack period.

## SPECIFIC MEASURES

Specific measures required in the development of a plan for continuity of leadership include those to:

1. Assure a functioning board of directors.
2. Establish lines of succession for key officers and operating personnel.
3. Establish an alternate company headquarters.
4. Assure records preservation.

This chapter deals with the legal problems associated with implementation of these measures.

The specific measures outlined above are authorized either under legislation exemplified by the Model Business Corporation Act (*see* Apppendix A) or, in the area of records preservation, by existing law.

The underlying principles of continuity of management are consistent with long-established legal concepts governing the corporation's normal capacity for "succession." That is, it continues in existence until terminated by constitutional or statutory provisions, dissolution, or until the expiration of the corporate charter.

Special problems arise only because circumstances which might exist after a nuclear attack on this country are in a sense so unprecedented that the operating rules developed over the years in an atmosphere of peace might be inadequate to cope with such an event. It must therefore be emphasized that these problems do not arise because the idea of succession to office or a reduced or minimum quorum for action by the board of directors is contrary to any fundamental principle of the law of corporations.

## THE BOARD OF DIRECTORS

The key measure to be taken to provide continuity of management is assurance that the board of directors can operate even though a large number of members of the board are dead or injured, or otherwise unavailable for board meetings.

Since a quorum is necessary for board action, and since this will for most companies require the actual presence of more than half the total number of established directorships, a definite possibility exists that under nuclear disaster conditions a quorum cannot be readily assembled and action could not be taken in accordance with law unless

some measure is adopted which would permit action with a smaller number or unless action is taken to replace the absent members.

The following methods have been suggested to accomplish this. These include:

*1. Reducing the quorum number:*

This has the advantage of relative simplicity. In most cases, however, the permissible reduction would not be substantial, since in most States in which a quorum of less than a majority is permitted, a minimum of at least one-third is required.

In the most difficult situation, where only one or two, or even no directors are available, the problem could be solved, where permitted, by authorizing the available director or directors to fill vacancies or *by the preemergency appointment of alternate directors.*

*2. Summary filling of board vacancies:*

Filling vacancies on the board, legally speaking, is also relatively simple. However, one problem in connection with use of this technique is that many of those absent may merely be incapacitated or unable to get to the meeting place because of the emergency. No vacancy, in fact, then would exist.

*3. Establishing an emergency management committee:*

Two alternatives to reducing the quorum number or summarily filling vacancies are coming to be recognized among major American corporations. The first and most frequent practice is to establish those who remain of the board as an executive committee or an *emergency management committee,* with all of the powers of the board during the continuation of the emergency. In those cases where special legislation has been enacted, there is specific authority for this remedy. However, only a minority of companies make use of it.

The corporation laws of most States permit, if the bylaws or articles so provide, the appointment of an executive and other committees composed of the directors. Each of these committees, to the extent provided, may have and exercise the authority of the board, with certain exceptions. In most cases the exceptions would not impede corporate *emergency* operating or reconstruction activity.

*The emergency management committee* approach is similar to the executive committee normally used by many companies. Most corporations which have executive committees vest very broad powers in them, and only actions such as declaration of a dividend or amending the bylaws are excluded. However, it must be recognized that the *emergency management committee* approach is subject to somewhat the same objections that exist for action with a reduced quorum.

*4. Appointing alternate directors:*

A second alternate would permit, to the extent necessary and by some predetermined order of priority, senior officers of a company to act as directors in order to build up the strength of the board to some more representative number for the period of the emergency. Surviving directors and temporary directors would function until conditions permit re-establishment of a full board.

In several States, there is no specific statutory authorization for this approach. Others permit the designation of directors prospectively in event of resignation. Generally, however, most companies believe that the method is prohibited by law or by existing bylaws or articles.

Naming of alternate directors during the preemergency period also presents some practical problems. Many companies might be hesitant to appoint such alternates, fearing that it might be construed as an indication of a possible future appointment in a nonemergency situation.

## EMERGENCY LINES OF EXECUTIVE SUCCESSION

While the board of directors sets general policy and is the entity legally responsible for corporate activity, it usually meets at stated times such as monthly or perhaps even only quarterly. Responsibility for day-to-day operation is vested in the officers. They have the broadest sort of authority. It is thus equally crucial that methods be devised to assure that there are successors to these officers.

Leadership needed for continuation of the management of the corporation could become virtually nonexistent, unless plans are made in advance for lines of succession. Corporate management has the responsibility to anticipate such postdisaster management problems and provide for them by first developing a management personnel succession list for each key executive or key position.

A simple form may be used for all levels of management executive planning. Names should be listed for each position in sequence of desired emergency replacements. Each name may appear a number of times, with varied priority of succession. A surviving person or immediately available highest person on the list would assume temporary responsibility for each respective position.

Unlike a governmental office, generally speaking statutes do not vest specified functions in particular officers, nor do they set out in detail the duties of an officer. The statutes usually require that there shall be certain officers such as president, vice-president, secretary, and treasurer. In some cases, the statutes authorize other officers. However, practice would seem to indicate that actual operation of the company may well be vested in some other of-

ficer or individual who is in reality the "chief executive officer."

Many companies already have established a line of succession for the chief executive officer operation under normal circumstances.

## ALTERNATE HEADQUARTERS

A third measure relating to continuity of management is the establishment of an alternate company headquarters. Many companies have established or are planning to establish such alternate sites. Since the principal officers of a large number of companies are located in possible vulnerable areas, such a measure seems generally appropriate. Companies in remote areas should consider, as a minimum, provision of fallout radiation protection for key personnel.

Most companies surveyed indicated there were no limitations concerning establishment of an alternate site. However, in a few cases it was noted there were requirements that corporate activities be conducted either at the principal place of business or in the State of incorporation.

It should be noted that while annual or special meetings may by law be required to be held in the State of incorporation, the law does not require that meetings of the board of directors be held at the principal place of business, or even within the State of incorporation. Many companies have adopted bylaws which permit the conduct of corporate activities at alternate locations.

The purpose of a remote control center is to bring together, should permanent offices become untenable, the policy-making skills, executive decisions, and communications necessary to maintain vital production in time of disaster. In this role it also serves as a communication nerve center for contact with government authorities, company installations, and employees in the central office area.

During normal operations, the alternate headquarters should have a small permanent staff to handle duplicate microfilms, files, and maintenance. Company personnel or a contract service can be obtained to provide 24-hour guard on the premises.

There are many ways to provide for operations at the alternate headquarters. The steps which follow are taken from the actual plan of one large company, which can be modified to meet your particular circumstances.

This sample detailed plan for manning alternate headquarters in the event of an emergency calls for assignments of executives on a three-deep basis. The three cadres are designated Principal, First Alternate and Second Alternate. Should world tensions become ominous, the plan is to staff the alternate headquarters on a rotating basis, at intervals of one week, on a repeating cycle.

Cadre assignments can be made on a geographical rather than an organizational chart basis. Thus, qualified executives living close to the center are assigned as principals, while higher-level management personnel whose homes are farther away often become alternates. Desk space is available at the center for those preferring to commute from their homes. For executives living-in, bedrooms are equipped to double as offices. An emergency staff group — such as secretaries and clerks—in the ratio of one to every three executives, has been selected on the same geographical basis.

A contract with one of the largest industrial feeding concerns in the East provides kitchen help and food service. Under this agreement, the center is supplied with a basic food inventory to sustain 100 persons for several weeks. The center's dining room can accommodate 100 persons for each meal.

In recent years, the center has been made available for all kinds of company meetings. Groups numbering from 15 to 70, and meetings lasting from 3 to 14 days have found the center to be comfortable, convenient, and economical. The surroundings lend themselves to greater productivity than city hotels, and costs per person are approximately half that of comparable meetings held in a city.

Another important facet of this security program is the company's plan to regroup employees after an attack. Throughout the metropolitan area, the company has established reporting centers where employees may report their availability for duty. The reporting centers, tied into the emergency headquarters' communications networks, are located in company installations and employee homes. Duplicates of employee personnel security cards covering area employees are on file at each reporting base.

In time of emergency, each of the reporting centers would be staffed with employees who have had personnel experience and training. Also assigned to these centers would be representatives of the company's treasurer's department, empowered to countersign checks kept on file.

As to the problem of reconstituting management, it is likely that details of this aspect of the security program are different from what would be the case in most other large companies. Any of the methods discussed earlier in this chapter will suffice as long as preemergency actions are completed. This means that the necessary charter and bylaw changes have been met, and all legal requirements satisfied prior to the emergency. It is usually too late to make necessary changes after an emergency situation develops.

To test the relocation plan, to seek out flaws, and to maintain equipment, this sample plan calls for periodic drills. On an average of one day each year the company puts its plan into action and its emer-

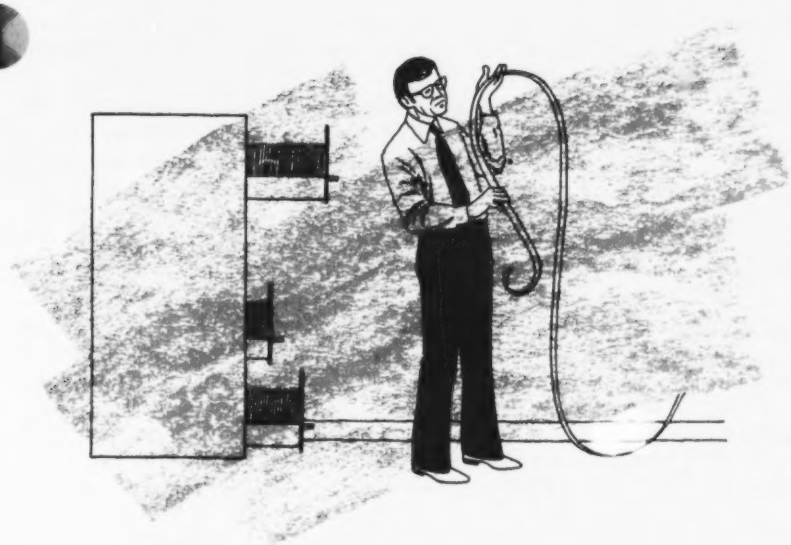
gency headquarters on an operational basis. On these days, one of the three staff cadres is assigned to the remote control center for simulated emergency duty. Problems are developed for solution by the Emergency Cadre, and for the test period the corporate structure is run from the relocation site. The purpose is to keep the center and its facilities active and ready for use, and to keep executives familiar with records, plans, and equipment—ready for the day no one wants to see.

## CONCLUSIONS

In conclusion, it is believed that while in most situations corporate continuity of management plans can be developed within the framework of existing law, the plans sometimes cannot be completely effective because they cannot provide a method to operate when nearly all of the directors are casualties of an attack. It is evident that a special stockholders meeting would require cumbersome procedures which would not be particularly adaptable to the situtation which could occur postattack.

Hence legislation similar to that contained in the proposed modification to the Model Business Corporation Act or the New York emergency legislation may be the most effective way to provide an indisputable legal basis for the continuity of management measures discussed in this chapter. However, until such legislative authority is available in all jurisdictions, substantial increases in preparedness can be achieved by utilizing the many methods described herein, making necessary modifications as required to meet individual situations and specific circumstances.

While this chapter contains references to legal problems and provisions, it is intended to be factual in nature and it does not purport to offer legal advice. Users of this book should, of course, consult their own counsel before acting on any suggestions that may be contained herein.



# IV

# Protecting Vital Records

Vital records — those necessary to insure the survival of business — constitute a small part of a company's records, normally no more than two percent. Therefore, it is important that vital records be given maximum protection from every disaster, including nuclear. Indeed, it is not unusual to find that for some businesses the information contained in their records is the single most valuable asset. The loss of processing and trade secrets, drawings, formulas, and the like, could easily end a prospering business.

## WHAT RECORDS ARE VITAL?

What records *must* a company have in order to function? This varies, depending upon the type of business; i.e., manufacturing, financial, institutional, and so forth. But there are certain fundamental records vital to any corporate organization—for instance, the incorporation certificate, the by-laws, the stock record books, the board of directors, minutes and certain corporate finance records would be vital to any corporation.

A manufacturing organization would, in addition, require engineering drawings and specifications, work processes and procedures, lists of employee skills required, and similar information. Without these, it is impossible to produce a product. The task of recreating all this information would be virtually insurmountable, especially for a complex product. A banking institution, on the other hand, would require current information on the status of depositors' accounts, accounts with other banks, loan accounts, and similar information.

## SELECTING RECORDS TO BE PROTECTED

The vital records protection program is an administrative device for safeguarding vital information, not for preserving existing records. Management begins to protect vital records by systematically determining what information is vital, and which records contain this information.

Management need not waste time and energy identifying records as, say, "vital," "essential," "useful," and "unnecessary." A record either contains vital information or it does not. If a record contains vital information it should be protected against every possible peril. But, if a particular record does not contain vital information, it has no place in the company's vital records protection program—even though it may have other value to the company.

Following is suggested procedure for analyzing a company's vital records:

A middle management project team analyzes a company's vital records information needs in four steps. (The logical team leader is the company records manager.)

*Step 1.*—The project team classifies company operations into broad *functional* categories. These

categories will be different in each company, but in general they should include at least:

Finance: bill payment, account collection, and cost accounting.
Production: research, engineering, purchasing, and related activities.
Sales: inventory control and shipping activities.
General administration: personnel, legal, public relations, and similar staff activities.

*Step 2.*—The project team determines the role of each function in an emergency. Not every current company function and activity will be essential to prompt afterdisaster recovery. Some activities must be suspended during the recovery period; some can be eliminated completely, despite possible inconvenience. If elimination or curtailment of an activity after a disaster will restrict the company's ability to restore some essential aspect of its operations, then that activity is vital; the information needed to maintain it is also vital, and should be protected.

*Step 3.*—The project team identifies the minimum information that must be readily accessible during an afterdisaster emergency to assure that vital functions perform properly. For instance, to stabilize customer account collections, it may be necessary to know from the most recent account statement, the outstanding balance at the time of the disaster and to have a record of subsequent purchases and payments. Or, to clarify field parts inventory conditions, it may be necessary to have access to a copy of the most recent sales agents' reports. (This step may disclose that some records that would be needed in an emergency are not created in the routine of daily business, and that a system should be developed to assure that these records are available for possible postdisaster use.)

*Step 4.*—Finally, the team identifies the particular records that contain this vital information and the departments in which they are, or should be, maintained.

## SAFEGUARDING VITAL COMPUTER INFORMATION AND RECORDS

Some of the vital company information that management seeks to protect is not captured on paper records and kept in filing cabinets. Instead, this information is processed by a computer and captured on the distinctive media associated with electronic data processing.

Effective protection of this vital information is more complicated than safeguarding paper vital records for the following reasons:

- Formerly dispersed information is consolidated, which intensifies its exposure to possible destruction or compromise. Paradoxically, this consolidated information becomes through remote data transmission equipment more accessible to more people. Greater accessibility to this information means greater chances for compromise and the introduction of error.

- The data processing medium is extremely vulnerable to a wide variety of perils; fire, water, dirt, and hazardous chemical gases, to name a few. Even a sharp blow through careless handling can rearrange and render worthless the magnetic data impulses that it records.

- A nuclear detonation also produces an electromagnetic pulse (EMP) which has been described as generally similar to a lightning strike. Experiments show there is a significant difference between the two phenomena and their effects on electrical components. Although standard lightning protection devices do provide some measure of protection, they cannot be relied upon for protection against EMP. Until well-tested EMP protective devices are available, the most effective technique for minimizing damage to sensitive computer components involves isolating them electrically and/or magnetically from the EMP environment. In many cases, satisfactory isolation can be achieved by temporarily disconnecting equipment containing the sensitive components from power sources, antennas, or other input/output leads that enter the computer area.

The company is almost totally dependent on the continued use of the computer to process information. There is no option in the event of emergency to revert to manual processing of this data. The manual records, the machines on which they were processed, and the proper personnel may no longer be available to the company.

Other reasons why effective protection of the vital information is complicated are:

- Information transmitted over a distance for remote computer processing or handled by a computer service bureau is out of the company's direct control and custody for an extended period of time.

- The computer and the physical area in which it is located must be protected along with the vital information which is so closely linked to it.

- The adequacy and validity of the programs used to process this information and related computer operations documentation must be safeguarded to assure the usefulness, currency, and accuracy of the basic information.

Much of what already has been said about selecting and protecting vital records applies to records processed by a computer. Many of the general measures taken to protect vital data processing operations and records are measures that ordinarily should be taken to assure the general efficiency of the computer and its use by the company. However, procedures used to protect vital data processing records must be compatible with the information

ystem design policies and the computer programming concepts used by the company.

In protecting paper or microfilm vital records, it is necessary to safeguard only the record itself. In contrast, in protecting vital data processing records there are three distinctive elements: (a) the computer facility, (b) the physical data processing media, and (c) the inherent integrity of the information itself.

## CONTROLLING THE COMPUTER FACILITY

It is preferable prior to computer installations to build many protective features into the area in which it is to be operated. However, where these features have been omitted or function inadequately, it is possible to remedy some defects even when the computer has been operating for some time. The following are some recommendations for improving computer facility security. They are not meant to cover every aspect of computer operations area design and layout.

1. Make the facility as inconspicuous as possible. Remove door and direction signs that identify the computer's location. It may be preferable to leave the computer facility entrances unmarked. Block off or otherwise eliminate display windows originally installed to permit exhibiting computer operations to visitors or those passing the building on the outside.

2. Strengthen controls over access to the computer facility. Provide 24-hour security guard surveillance of the area. In some companies this may be supplemented by installation of closed circuit video equipment to permit monitoring of computer facility approaches by the company security center duty officer. Install security hardware on all computer facility entrance doors. Maintain a record of all visitors—both outsiders and nonassigned company employees—and require that they wear a distinctive badge while they are in the computer facility. Encourage assigned employees to question visitors about their right to be in the facility, even when they are wearing visitor badges. Prohibit delivery by vendors of stocks of forms and other supplies directly to the computer facility. Do not permit vendor representatives to stack these materials in halls or corridors.

3. Review possible computer facility exposure to water and fire damage. Determine if the walls, ceiling, and air conditioning system are sufficiently watertight to prevent possible damage in an emergency. Be sure that drainage under the facility's raised floor is adequate to avoid water accumulation wherever flooding may occur or water might be used to extinguish a fire. Reduce exposure to arson attempts by moving air conditioning and ventilation air intake ducts from the ground floor to well up on the building side—possibly even up under the eaves. Wherever local fire codes permit, remove water-sprinkler fire extinguisher systems and replace them with carbon dioxide or Halon 1301 systems. Make prompt removal of continuous form carbon paper accumulation and similar waste a part of computer facility work routines. To further reduce fire hazards from accumulating waste, prohibit smoking or eating within the computer facility. Include a test of the heat/smoke detection system in the periodic check of computer facility emergency action procedures.

If the computer facility is located in an urban high-rise controlled-environment building, consider the possible fire effects of two basic building construction features: Heat circulation openings between the exterior and interior building walls may encourage fire to spread by breaching fire walls. The sealed windows may intensify heat buildup by offering no openings through which it might dissipate naturally.

4. Provide sufficient emergency power generation capacity to compensate for voltage surges or extended voltage reductions, and otherwise maintain uninterrupted power input to the computer. A battery pack with converter, possibly integrated into a motorized generator, will be required.

Minimum power failure reserve needs: From 15 to 18 minutes, sufficient to reach the nearest restart point and to shut operations down in an orderly manner. Attach an audible warning device to the emergency power source to assure that the computer operator and others are notified promptly of the shift to reserve power.

5. Alternate computer facilities to be used in an emergency must be truly compatible with the company's computer and the work performed on it. The alternate facility should have sufficient reserve processing capacity and mainframe schedule time to permit it to handle in an emergency the company's work and its own. Be sure that the two computers are comparable in memory size; hardware options available; resident operating, or executive, system supervisory program; and peripheral equipment. Determine the impact of any differences on the program itself and the data preparation routines used in the material to be processed on this alternate computer.

6. Consider a Farraday Cage to shield vital information containing company secrets from external monitoring while it is being processed.

7. Make sure that all unused wiring—including telephone cables—is removed from the computer facility. Make sure that heating and air conditioning ducts and water pipes are grounded as close to the computer facility as possible. Both practices will reduce the likelihood of a tap being placed on the data processing system.

## SAFEGUARDING DATA PROCESSING MEDIA

Data processing tapes and disks containing vital information must be protected by placing them in specially insulated records containers which have been approved by Underwriters Laboratory for temperatures up to 150°F. Underwriters Laboratory does not certify a fire door that will protect the contents of a records vault or file room at 150°F. during a fire. Thus, data processing media containing vital information can only be physically safeguarded by placing them in specially insulated records containers.

Vital records magnetic tape files and the computer programs used to process them can be provided with additional protection by copying them in card image form onto duplicate tape reels to be dispersed for storage at a geographically remote company operating location. The principles behind protecting paper vital records by dispersal apply here as well. To avoid possible fraud, these dispersed tapes should be placed in the custody of the internal auditor at the location where they are stored. Where data files are updated periodically, three generations of the file can be retained; the current version and two previous ones. The grandfather (oldest) version of the vital records file is stored off-site until replaced by a later version. When the vital information files is maintained on a disk file, a snapshot (complete copy of its content at a specific point in time) is made periodically by copying file content onto a tape. The two oldest snapshot tapes are stored off-site until replaced in turn by later snapshots. In both instances, these off-site stored tapes can be used with related transaction records to reconstruct files damaged in a disaster or by computer processing error.

## ASSURING INFORMATION INTEGRITY

The integrity of computer processed vital records is maintained by careful control over data input and user file access, program content revisions, and computer facility operating practices. In each of these areas some protection will be provided by normal data processing management practices. However, special attention should be given to their impact on computer processed vital records.

1. *Input and file access.* — Input data editing routines can be designed to detect and automatically reject spurious information. Vital records processing programs also can be designed to limit selectively user access to key file segments and to restrict user ability to modify certain types of information in the file. In addition, the resident supervisor or operating system program should maintain a log inaccessible to assigned computer operators. This log should routinely record programs processed, files used, computer operator assigned, and travel use rate and elapsed time. Where the computer facility services a data transmission network, this log also should record user terminal identification, and the type of inquiry made. Computer facility supervisors and company security officers should review the log jointly at least once weekly and investigate questionable inquiries and other apparent irregularities.

2. *Program content revisions.* — Computer programs used to process vital information should be fully documented. A current copy of this documentation should be stored off-site with the dispersed file copy tapes. Programs purchased or leased from another company should receive protection equal to that given to company-developed programs. Programs from outside sources may have been adapted in some way to the company's specific data processing needs. Documentation incorporating all the necessary features for such an adapted program may be difficult or impossible to obtain from the supplier on short notice. Company computer facility operating policies will determine full documentation file content, but the program segment of it should encompass at least the following: A plain English narrative description of what the program does; definition of transaction content; block or program logic diagrams; decision tables; source coding; assembly listings; a register of checkpoints, error messages, interruptions, together with restart and recovery instructions; and a description of input, output, and transaction processing controls.

As company operating policies and procedures evolve, the programs used to process computer vital records must be altered to reflect these changes. Program changes should be fully documented; programmers involved in these changes must be clearly identified in the program documentation; and, both the user department and computer facility supervision must review and approve these changes before they are implemented. Programers must not be permitted on their own initiative to make even minor changes in production programs that they are running.

3. *Computer facility operating procedures.* — Assign computer operators to work in pairs at all times, even on weekends and holidays, and especially when vital records are being processed. Normally a supervisor or senior operator is assigned to work with a less experienced person. Teamwork will improve overall operations quality and make it more difficult for operator errors or data alteration to go undetected. The possibility of file destruction through computer operator error can be reduced further two other ways. Place the operating or executive supervisory program in read only memory. This will safeguard the program's memory protection feature which prevents accidental file segment destruction

and blocks illegal file use. Also, include intensive job completion condition checks in every program. Instruct computer operators not to terminate or dismount any program until a satisfactory end of job message from the program has been logged on the console terminal.

Computer operator team assignments and work shifts should be rotated periodically to maintain separation of duties operating controls. As part of these same controls, an operator should not process the same programmer's programs for an extended period of time.

Encourage operators to remain alert to facility physical condition changes. They should check periodically during each shift for such things as magnets, screwdrivers, files, and other small potential sabotage tools; disengaged security and fire alarm equipment, and, open doors to operational disk units and other peripheral equipment.

Careful scheduling of computer time ensures more efficient use of the facility's capacity and makes it easier to spot diversion of computer time for unauthorized copying of vital information files. Vary the schedule for processing particular vital records; do not run the program at the same time each day or on the same day each week.

Certain information can be identified as vital only as long as it remains uncompromised by industrial espionage efforts. Extra steps must be taken to prevent compromise of the company's computer processed vital information. Pulverize used continuous form carbon paper, impact printer ribbons, discarded forms and printout copies, and used tabulating cards in a document disintegrator located in the computer facility. The disintegrator's product does not require additional protective handling and may be disposed of with the building's regular trash. Write streams of random digits over disk packs and tapes that have contained vital information before they are released for use with other files and programs.

Special operating procedures for remote data transmission terminals will reduce the possibility of compromising vital information in connection with terminal use to add information to or process files. Data sent over common carrier lines is exposed to interception through line taps. It can be reproduced in a tap attached printer compatible with the data transmission system used. Addition of store and forward capabilities to the tap terminal makes it possible to hold the intercepted information and to modify it before releasing the information back into the system. Programs used with data transmission systems make it possible to disguise vital records message content during transmission. Decoding at either end of the transmission link makes the input processible or the program response understandable at the remote terminal.

## TESTING AND EVALUATING THE VITAL RECORDS PROGRAM

The vital records protection program is designed to protect and provide the information needed by the company for survival in a disaster or emergency. But will it? Management must know. Periodic vital records protection program tests will provide the answer.

The company security officer, records manager and internal auditor should test/evaluate the program at least once a year, and note any program defects or problems in a joint test results report to be sent to the proper company officer for information and remedial action.

1. *Determining test objectives.*—The test determines if the currently operated program will provide needed information under circumstances simulating disaster or emergency conditions. Every effort should be made to make test conditions as realistic as feasible.

Broadly, the tests should verify that vital records needed after a disaster are: (a) current (b) protected sufficiently against natural disasters, nuclear detonation and other possible perils, and (c) retrievable as needed in useable form.

More specifically, the tests should determine that the company's various vital information needs can be satisfied in a typical emergency situation. As examples:

- Employees can be paid and proper deductions made for taxes, the retirement fund, and other payroll accounts.
- The company's cash position and the location of its banked funds can be determined.
- The company assets, and accounts receivable and payable ledgers are all current.
- The order entry, engineering, production, and customer account information needed to resume production and sales activities are available and current.

2. *Preparing and conducting the test.*—After scheduling the test, determine where it will be held, who will participate, and how long it will last. Restrict advance knowledge of the test date to as few people as possible. Keep the test period as short as possible. The amount of time required for the test will vary. A large company may need several days to complete it. A small company may need no more than an afternoon. Reduce to a minimum participants' absence from their regular duties. The test should be located off company premises, if possible. It may be held at a motel, an executive conference center, the company alternate headquarters site, or in a conference room made available by the local civil preparedness agency.

Well in advance of the scheduled test date, arrange for necessary test participant team support,

working space, couriers, microfilm, and copying equipment, and access to data processing equipment. Also, arrange for several company executives not scheduled to participate in the test to act as judges. They should be familiar with the records used in the test. They must be able to determine if the problems posed by the test have been answered successfully.

After the participants arrive at the test site, explain the test conditions. Emphasize that the problems posed must be answered by records currently included in the Vital Records Protection Program. Give the questions to the test team.

3. *Typical vital records test problems.*—Assume that the plant has been completely destroyed during the night, with nothing salvageable. Demonstrate the company's ability to perform tasks such as the following:

1. Notify all managers to report to an emergency center for reorganization planning.
2. Notify all other employees not to report to work until further notice.
3. Continue paying plant personnel on time.
4. Send alternate shipping instructions to vendors with whom orders have been placed.
5. Prepare a list of sources of supply for a specified product.
6. Produce engineering drawings and the bill of materials for a small number of specific products.
7. Prepare an insurance claim statement covering the complete destruction of the manufacturing buildings.
8. Prepare a list of vendors in order to replenish operating departments.
9. Produce a current statement of assets and liabilities and a statement of income and expense.
10. Produce a list of commission balances for each manager and salesman by man number.

Allow time for test team members to determine what records will be needed to answer the questions.

As the requested records arrive by courier from their various locations, they must be reproduced or reconstructed in useful form. If the records are on microfilm, prints must be made of the first 10 images on each reel. These prints must be inspected by the test judges to determine that they are sufficiently legible for use in performing the specified test task. If the records are on computer magnetic tape, the test must print out successfully the first 100 records on each reel. The judges must determine that the printout adequately reproduces these records.

Records used in the test must be returned by the couriers to their protected locations as soon as the test is over.

4. *Testing vital computer records and operations.*—Vital computer records will be used to satisfy many of the basic test problems. But a comprehensive evaluation of the Vital Records Protection Program requires supplemental testing of vital records computer processing. Devise tests that will:

1. Compare a clean copy of the tapes for selected vital records processing programs against a copy of the programs currently in use to determine that protected computer program documentation is current.
2. Demonstrate that computer audit trails are being maintained in vital records computer programs.
3. Determine that the alternate computer and its associated supervisory programs still are compatible with the company computer facility.

Additional aspects of computer facility operations should be tested. These will be determined by company data processing management policies.

# V

# Using Your Plant Emergency Services

Every industrial firm, regardless of size, should establish an internal organization that will be able to act in time of emergency to protect life and property in time of any emergency.

Many of the emergency services which will be needed, such as warning, communication, police, fire, rescue, health, and engineering, in all probability already exist in the regular plant organization. Certain other services, such as radiological monitoring, warden service, shelter management, continuity of management, alternate emergency headquarters, and protection of records have little, if any, counterparts in the normal peacetime industrial structure and therefore must be added to meet the challenge of the nuclear age.

Emergency services should be geared to the size and complexity of the facility involved and to the problems likely to arise. In most cases, duties can be assigned to the regular company organization. This not only minimizes cost, but contributes to efficiency of operation because employees have practical knowledge of the facility.

## THE EMERGENCY COORDINATOR

As a first step in establishing an emergency capability within your facility, an emergency coordinator should be appointed at the corporate level. It is his responsibility to develop an emergency organization, develop emergency plans, take preparedness measures, and supervise recruitment and training of personnel. In large organizations with complex problems, a full-time emergency coordinator may be required. In smaller facilities, this duty may be assigned as an additional responsibility.

The coordinator should maintain close liaison with local civil preparedness officials and, through them, with appropriate departments of local government and with the emergency coordinators of other plants in the community.

Specifically, he should see that the company emergency plan is put in writing so that everyone will know exactly what he is to do in various types of emergencies, and what resources are available. The plan should be kept up to date.

The coordinator should also set up cooperative arrangements with other firms, local government, and nearby military installations, as appropriate, for support and mutual assistance in emergency.

Further, the coordinator should arrange to get special training for all persons assigned emergency responsibilities in the company.

## THE EMERGENCY ADVISORY COMMITTEE

The company emergency coordinator's efforts will be strengthened if an Advisory Committee is appointed to guide and assist him. Committee members should represent key departments and employee unions. Simultaneously, the company should encourage cooperative efforts among company executives and between management and employees.

## TRAINING FOR EMERGENCY MANAGEMENT

In organizing for self-help in emergencies, it is vital that the emergency coordinator and advisory committee be thoroughly informed and trained in what to do and how to do it, in what other companies are doing, and in the community's emergency procedures. They should be prepared for natural disasters such as hurricanes, tornadoes, floods, earthquakes, and blizzards; major industrial accidents such as explosions, fires, and chemical leakage; radiological incidents, sabotage, civil disturbances, bomb threats, and nuclear attack.

A special course in Industry/Business Emergency Planning is presented at the DCPA Staff College, Battle Creek, Michigan. This course provides comprehensive training for industrial executives and security personnel. Tuition and living quarters are free, as are publications which comprise a complete private library on all aspects of emergency disaster management.

Over 3,000 industrial and business executives and government officials are graduates of this course. Professional industrial emergency and disaster planners serve as visiting instructors and guest lecturers. They describe what they are doing in their respective companies, the problems involved, how they have solved such problems, and how emergency preparedness has paid off. The exact dates for these courses, along with complete information, are available from local government civil preparedness directors; from the DCPA Staff College, Federal Center, Battle Creek, Michigan 49016; or from Liaison Services Division, Defense Civil Preparedness Agency, The Pentagon, Washington, D.C. 20301. Ask for Industry/Business Emergency Planning Course Announcement, FG-F-3.10; and Civil Defense Training for Business and Industry, FG-F3.46.

## GUARD AND POLICE SERVICE

The plant guard chief, security chief or whatever his title, should be familiar with all parts of the plant, all known hazards, and the plant's self-help organization.

If the plant is large, a permanent guard force probably is assigned. In a smaller plant, however, the guard force might be comprised of selected employees trained for guard duty during times of emergency.

Where it is necessary to establish an auxiliary guard force, the force should be made an integral part of the parent group. Auxiliary guards should receive instructions from the regular guard personnel, and as a rule, should receive training in sabotage prevention.

The head of security services should be directly responsible to the plant manager or someone designated by him.

Related courses and publications titled "Law and Order Training for Civil Defense Emergencies", (Instructor Guide 10.1A and B and Student Manuals 10.1A and B.) are available through your local civil preparedness organization.

## INDUSTRIAL MEDICAL AND HEALTH SERVICE

It is anticipated that a disaster would overtax the facilities normally used as plant dispensaries, or destroy them completely. For this reason, emergency casualty stations should be preselected and facilities set up. Consideration should be given to the possible use of washrooms, change houses, canteens, storerooms, and other areas which might be suitable. At least one such station should be selected in each area in the plant, with alternate locations specified. Functions performed there would include screening of casualties as they are brought in (to determine priority of attention), treatment of shock, bleeding controls, relief of pain, dressing of wounds, splint application, initiation of identification and casulaty records, and arrangement for transportation to other facilities.

Severe cases, after receiving first aid, should be transported as quickly as possible to the nearest available medical center staffed by physicians and nurses.

The emergency medical service should be built around the facility doctor or nurse. Additional personnel should be assigned to medical duty, as required.

The medical service must arrange for an adequate inventory of medical supplies, which then should be checked periodically. Information programs could be initiated to insure good health under shelter conditions, and to remind employees to keep available any special medications required.

The U.S. Public Health Service and the Defense Civil Preparedness Agency, in cooperation with the American Medical Association, have developed a "Medical Self-Help Training Program." It is designed to prepare people for survival when professional health personnel are not available. This training is a necessity for all employees assigned to a company's Medical Service. The 16-hour course is given without charge under arrangements made by the State health department and the State civil preparedness office. The local civil preparedness director can provide specific information.

## EMPLOYEE WELFARE SERVICE

Plant managers should assure that in the preparation of all emergency plans adequate consideration is given to the welfare of employees and the public.

In the event of a major disaster (e.g., flood, hurricane, tornado, etc.), problems of food, drinking water, sanitation, and emergency shelter require immediate attention.

At least one individual in the company's emergency control group should be made responsible for each of the following:

1. All emergency welfare services.
2. Establishing liaison with appropriate agencies (Civil Preparedness and Red Cross).
3. Utilizing facilities available for alleviating emergency hardships.

Among emergency welfare services are feeding, clothing, lodging, registration and inquiry, and financial assistance.

Because plants and their shelter facilities may have to be used as community welfare centers during major disasters, plans for industrial emergency welfare services should be coordinated with those of the community.

Training is available through local civil preparedness agencies.

## RADIOLOGICAL DEFENSE SERVICE

In the event of a nuclear disaster, trained radiological monitors would be required to detect and measure radiation. Following nuclear attack, fallout would pose the greatest radiation danger.

As a preparedness measure, radiological detection and measuring instruments have been placed in most public fallout shelters, and individuals have been trained in their use. Industrial plants should also be prepared to deal with peacetime radiological incidents. Company services should be provided by a radiation monitoring squad, operating under the direction of the Emergency Coordinator. At least one radiological monitor and alternate should be available for each shift.

The emergency Coordinator should organize the squad, appoint members and leaders, assign appropriate duties, and supervise the radiological monitoring training program.

In restoring production after a nuclear incident, areas, facilities, equipment, and supplies should be checked first by the radiological monitors.

A storage place for monitoring equipment should be selected in a place least likely to be damaged or blocked by debris. Members of the monitoring squad should not be assigned to any other emergency service.

Arrangements should be worked out with your local civil preparedness agency for an exchange of radiological defense warnings and monitoring data following a radiological incident. Coordinated emergency action plans should be developed.

## ENGINEERING SERVICE

An engineering service should be established to develop and maintain emergency facilities, establish and test shutdown procedures, prepare damage assessment reports, and perform postdisaster repairs and restoration.

Engineering service personnel may also be called upon to design, construct, equip, and maintain at the plant site fallout shelters, a plant warning system, the company control center, and the emergency communications system.

These facilities may have special emergency requirements for water, light, heat, ventilation, and electric power.

The engineering service should also collaborate with the medical staff on sanitation engineering for all emergency facilities; e.g., the inspection and proper control of toilet facilities, garbage and trash disposal, and hygienic procedures.

Engineering service personnel also should study all operations to determine whether precautions are necessary to protect equipment during shutdowns and preserve it over an extended period of nonuse. Personnel in each department should be trained in shutdown procedures.

Each company's disaster planning should consider all utilities such as water, gas, steam, power, ventilation or refrigeration devices. Drawings showing the location of key valves, switches, and feed lines should be accessible during an emergency. Consideration should be given to maintaining an adequate water supply after shutdown. A survey of all water-collecting units should be made (e.g., sprinkler lines, processing water tanks, tubs used in wet-processing operations, and water being used for humidifying purposes). In many cases, such water may be used for firefighting, decontamination procedures, and general sanitation, even if it is not fit for drinking. The use of water from nearby rivers, lakes, or wells also should be considered.

A secondary source of drinking water may be available in federally furnished water drums in some public fallout shelters.

## RESCUE TEAMS

The mission of rescue teams in a natural disaster, industrial accident, or enemy attack is to:

- Locate and extricate persons trapped in damaged buildings, shelters, vehicles, and other enclosures, or from radiologically contaminated areas.
- Render essential first aid during the release of victims and their removal to the nearest safe location or aid station, or until first aid teams arrive.
- Remove bodies of victims.
- Recover critical supplies, equipment, and materials needed for survival, such as valuables, clothing, food, and medical supplies.
- Assist in making emergency repairs.
- Assist in clearing debris.

Rescue operations should be carried out in two phases:

*Phase One*—Removal of persons lightly trapped either on the ground or within slightly damaged structures. These removals may be effected by people with basic rescue training.

*Phase Two*—Removal of persons heavily trapped either on the ground or within heavily damaged structures. These rescue operations depend on the services of highly trained and equipped rescue squads.

The squad or team is the basic unit of the rescue organization. Rescue teams should be composed of 4 to 10 persons per shift, per area.

A team leader and assistant team leader should be selected. Where possible, team members should have construction and maintenance trades backgrounds. They should be physically able to endure arduous work for long periods of time. All should be trained in first aid.

## STAFFING YOUR EMERGENCY ORGANIZATION

The question often arises: "How do I find dedicated and capable employees to staff the various emergency services? Do I arbitrarily select certain employees and give them this added assignment, or do I ask for volunteers?"

In many companies, there are employees who are trained and experienced in lifesaving and property protection skills and activities. A former member of a community volunteer fire department is an obvious candidate for the plant fire brigade. A survey may reveal that many employees may already be trained in first aid, rescue techniques or police and guard duties.

A simple method for obtaining qualifying information is a questionnaire which each employee is asked to fill out. Questions should elicit information regarding training and skills which can be effectively utilized in the company's emergency self-help organization. Many companies have reported the full cooperation and interest of their employees in such an inventory.

It should be made clear to each employee that information given is voluntary. The purpose should be clearly explained.

From the employee's standpoint, the information he divulges may assist him in obtaining a higher job classification. It acquaints management with heretofore unknown skills and interests which may be put to good use in the work of the company.

Industrial emergency and disaster preparedness is not costly but it takes time. Don't expect to accomplish it overnight. But in establishing the plant self-help organization in accordance with the steps outlined here, remember that firms not only serve their own business interests, but also the welfare of their employees and their families, the community, and the Nation.

# VI

# Plant Emergency Operations Planning

Emergency readiness means you are prepared to react promptly to save life and protect property if your plant is threatened or hit by a major emergency or disaster of any type.

If a hurricane or flood threatens, hundreds of employees may need to be evacuated from low-lying areas and then fed and housed until the danger is over. A massive effort may be needed to strengthen dikes or levees when a river is rising to flood stage. If a tornado or earthquake hits, the damaged area must be combed for injured people and they must be given first aid and medical attention as promptly as possible. Also, the homeless must be fed and housed. If a plane crashes, there are usually massive problems of getting fire and medical units into the damaged area and of keeping the curious out. The same types of emergency operations, but on a far larger scale, would be required if the United States should ever suffer a nuclear attack; and there would be the added need to shelter people from radioactive fallout.

Engineering, security, fire, and health service personnel (plus doctors and other medical professionals) are the frontline forces that take the lead in carrying out the lifesaving and property-preserving operations required by a major emergency or disaster. Oftentimes they will be reinforced and assisted by police, fire, and other emergency services from the area or neighboring communities. Employee volunteers will often be used; for example, persons to fill sandbags and strengthen levees or to help security and fire forces search an earthquake-damaged area to rescue injured survivors.

## NEED FOR COORDINATION

There is one thing that distinguishes disasters or major emergencies from the emergencies plant personnel deal with every day. This is the need for coordinated emergency operations. Poorly coordinated operations can lead to loss of life that might have been avoided or to needless destruction of property.

The concept of emergency readiness can be summed up by saying that the forces of government and industry must be able to "do the right things at the right time" when the chips are down. This includes the means for coordinating all emergency operations—those of the regular police and security forces; fire forces; ambulances; hospitals and medical personnel—and all other people and units with capabilities for helping under disaster conditions.

## RESPONSIBILITIES OF KEY OFFICIALS

As a practical matter, key local government and organization executives are responsible for coordinating the emergency operations required in major emergencies.

The essential first step in preparing for disaster operations is establishment of an overall corporate disaster plan which has the approval of management as well as appropriate government officials.

## HOW TO DEVELOP THE BASIC PLANT PLAN

In preparing the plant emergency plan, the elements outlined below should be included in the basic plan:

### 1. Authority

This section should include reference to company directives which authorize an emergency plan, organization of the emergency operating forces, and designation of an emergency coordinator.

### 2. Types of Emergencies

This section should list types of emergencies most likely to affect the plant, based on location, terrain, type of industry, and past history. The listing should not, however, be *limited* to types of emergencies experienced by the company.

### 3. Plan Execution

The basic plan should provide for coordination of government and company actions before and during a disaster. In an actual widespread emergency, an authorized local government official (mayor, civil defense director, police chief, etc.) takes charge of the overall situation. Within the plant, the responsible official is part of management. If the situation warrants, he places the emergency operating plan in effect.

## SUPPORTING INFORMATION

The basic emergency plan should be supported by appropriate appendices that may be needed during an emergency. Six specific appendices are recommended:

### 1. Maps

Plant facility and street maps (as well as other maps) may be tacked to sheets of wallboard. Grease pencils and colored pins may be used on clear plastic overlays to depict emergency situations and to show the locations of available manpower and equipment. The use of overlays to visualize the situation has proven successful not only to illustrate what's happening, but also to help make decisions on emergency actions to be taken. The information should be kept simple, with color coding used as much as possible.

### 2. Procedure Charts

Simple organizational charts can be useful before and during emergency operations. The most effective charts are those not cluttered with detail and notations. Usually the names, titles, addresses, and telephone numbers of key emergency personnel will be sufficient. Also, the charts should show which members of the emergency control center staff are responsible for certain actions, such as dealing with other industries or contractors who have emergency equipment or supplies on hand.

### 3. Call-up Lists

Call-up lists of key personnel will be useful in activating the basic plan. These should include names, addresses, phone numbers, and organizational responsibilities for emergency operations. It is suggested that alternates be listed in case primary personnel are not available. In addition, plant officials should carry pocket cards containing the names, phone numbers, and locations of local government and plant emergency services staffs.

### 4. Listings of Local Resources

Major sources of additional manpower, equipment, and supplies should be considered in preparing a plant "Resources Data Book." The telephone book in the community, supplemented by lists of skilled manpower, equipment, and supplies available may be used for this. The "Resources Data Book" should not contain such details as specifications on the resource items themselves, since these will change frequently. The resource listings should be updated at least annually.

### 5. Mutual-aid Agreements

Mutual-aid agreements exist among many companies and govenment agencies. Management and government officials may agree to assist one another in event of a major emergency, within defined limits. The provisions of these agreements should be known to the emergency coordinator and the controll center staff.

### 6. Need for a Glossary of Terms

To be effective, the basic plan and the appendices should use terms that mean the same thing to everyone concerned. To accomplish this, a glossary of terms should be included as a separate appendix.

## EMERGENCY CONTROL CENTER

An effective communitywide emergency operations capability requires local government, local facility, and organization cooperation. The local civil preparedness director is the key to community preparedness. He must coordinate planning for use of local resources in a major emergency. His control center in emergency would be the Emergency Operating Center of local government. A similar control center should be set up in each industrial facility.

These centers should offer at least some protection from the effects of natural and other peacetime disasters, and from the effects (blast, heat, radiation) of nuclear attack. The more protection, the better. Any emergency operating center, or control center, must be a communications center, so that responsible officials gathered there can keep informed of the developing situation, and can base control decisions on factual information.

There should be good communications links from plant emergency control centers to local government EOC's and to the control centers of facilities with which mutual aid agreements have been reached.

The communications facilities should also enable local government officials to communicate readily with the public.

### 1. Locating The Plant Control Center

Although the ideal of a protected location for a control center has been stated above, for emergencies other than enemy attack, the plant emergency coordinator can operate in almost any place that provides shelter from the elements and adequate communications.

For nuclear attack planning, the area selected for emergency control should provide fallout protection and if possible, blast protection. Many areas that do not provide fallout protection can be modified in a crisis period to offer such protection.

There also should be tables and chairs and some wall space for maps and personnel notices. It is best to have a good primary plant control center located where it is readily accessible to plant management. For extensive facilities, one or more alternate control centers should be designated in case a disaster prevents use of the primary one. Most important, there should be centralized coordination of all plant emergency actions.

### 2. Use of Available Communications

No one communications system is ideal for coping with all disasters. The most practical approach is to make an inventory of all existing communications systems in the plant, and determine how they can be "tied-in" for emergency purposes with each other and with communications systems within the community.

This inventory should include telephone switchboards, radio base stations, mobile units (one-way and two-way), and portables—whether owned by government, business, employees, or other citizens.

Local broadcast stations (radio and TV), particularly those with emergency power resources, can provide extensive one-way emergency information to the public. Local newspapers can supplement this in emergency with more complex and detailed information. Police, fire, and public works emergency service communications can be augmented by using commercial or amateur radio systems for supplementary or backup purposes.

### 3. In-plant Warning and Communications Systems

Adequate and timely warning of an approaching natural disaster or enemy attack is one key to survival. Local civil defense warning systems use both outdoor and indoor signaling devices. These may include:

—outdoor warning sirens
—whistles, horns
—public address systems
—direct emergency telephoning
—Muzak systems
—fire sirens and bells
—flashing lights
—television and radio including two-way citizens band radio
—industrial land-line and radio systems

A West Coast company describes how its plant's public address system is used for warning:

"Each major plant has a public address system which is routinely used for internal paging and announcements. The guard dispatcher, by a flip of a switch, can take complete control of the public address system for emergency announcements. The general notification to employees is given by prerecorded announcements played over the public address system by the dispatcher. The company feels a record is desirable in order that the message be given as clearly and concisely as possible."

Employees must be informed what the warning signals are, what they mean, and what action is to be taken.

## EMERGENCY SHUT-DOWN PROCEDURES

Protection of people is your first priority. Protection of plant facilities, equipment, and supplies is also important. Both can be essential to rapid restoration of operations after disaster. Emergency shutdown procedures may have to be effected as part of your disaster operations. These should be well-established, for implementation as necessary in specific emergencies. Damage and loss may be averted or reduced further by continuing damage assessment and control, and by emergency protection measures.

If time permits after receipt of warning, it will be the responsibility of all employees to contribute to the protection of company property and classified materials before leaving the work station.

Your emergency preparedness planning should include attention to the following:

- Develop a complete checklist for emergency shutdown and disaster control.
- Instruct and train personnel to implement the emergency shutdown procedures.
- Establish damage assessment and control techniques to minimize property loss during a disaster.

The more obvious areas to be considered in developing emergency shutdown procedures are as follows:

1. Emergency shutdown procedures for plant utility services and equipment should be developed and tested by the department managers concerned. Instructions should be prepared and posted on or near the control panels, valves, switches, and operating mechanisms of each piece of major equipment. Maintenance employees on each shift should be assigned

specific responsibilities for emergency shutdown. Red emergency shutoff tags should be stored with or near each major piece of equipment for attachment at the time the shutdown procedure is to be carried out.

2. Provisions should be made to protect valuable and sensitive tools, instruments, machinery, and materials. Plans should be made to store precious metals, and original drawings and prints in locked storage or moved to safer locations, depending on time available and nature of the anticipated disaster.

3. Personnel on each shift should be designated to close doors and windows, tie down loose equipment, move equipment and supplies to shelter areas, and to barricade windows and doors. Other personnel should be assigned to stand by firefighting hoses and equipment. Assignments involving physical security of the plant should cover established building zones or areas. Section heads and leadmen have responsibility to complete shutdown checkoff lists and to supervise shutdown procedures in their particular areas.

4. Equipment and materials stored outside should be protected by banding, tiedown, moving critical or valuable items to inside storage, or moving mobile equipment to high ground or protected sides of the buildings, depending upon time available and the anticipated disaster condition.

## MOVEMENT TO SHELTER

Movement of employees to shelter in advance of a natural disaster or an enemy attack is a very important action which requires advance planning and coordination, both with your plant emergency organization and with the local civil preparedness director.

Over 200 million public fallout shelter spaces have been located in existing buildings throughout the United States, and additional spaces are added each year. Your plant may be among the over 200,000 facilities nationwide that has shelter space for employees or for the public. Your local civil preparedness director can provide you with details concerning shelter in your plant and in the surrounding area.

In order to make the best use of the public fallout shelters which are ready for public use, many areas have completed a Community Shelter Planning (CSP) program. Community shelter plans allocate the population to shelters according to community areas. If your local government has a CSP, you may already know where to move your employees within your own plant to take advantage of the shelter capabilities of your own buildings. If your facilities do not have shelter, the CSP will designate nearby space for your employees.

For within plant movement to shelter, a general traffic plan must be worked out, directional signs and instructions printed, and each employee advised as to the location of his shelter area. The plant civil preparedness coordinator should assign corridor, floor, and building wardens to assist in the orderly movement of employees.

Should movement to shelter take employees outside the plant, management would have the responsibility for orderly evacuation of the premises. Plans must be worked out with the local government civil preparedness director for this type of movement to shelter. If your plant has more shelter space than employees and is designated in the CSP to receive additional people from nearby areas, plans for their movement and reception should also be worked out with your local civil preparedness director. Orderly movement of these people to shelter areas within the plant should be under the supervision of plant wardens and other designated employees.

# VII

# Informing and Educating Employees

The most highly organized and fully implemented disaster plan is destined to failure unless the people it is designed to serve, understand it and take an interest in it. Any effective disaster plan depends on key personnel to make it function. There are many jobs to be done, ranging from the initial planning of the program to the following of warden's instructions when moving to a shelter area. For each person to do his job correctly and without hesitation, it is essential that all concerned recognize the importance of the program.

A person's readiness to recognize the need for disaster preparedness varies somewhat with the type of work he does, the industry in which he works, and his geographic location. People living in "Tornado Alley" are quick to recognize the dangers they face every spring. Gulf Coast and Atlantic Seaboard residents are acutely aware of the hurricane threat. Workers in industry also can be made to realize the susceptibility of their plants to enemy attack in the event of war. In speaking to employees, the important thing is to describe the primary threat to the operation while pointing out the value of a good emergency plan.

The selection of the proper media to inform the employees requires careful planning. The best preparedness literature in the world is of little value if it is not read and digested. There are many different methods available to tell employees, and others, about the company's emergency plans. Naturally, some can be adapted more readily to a particular plan than others, but many methods have been used successfully for decades by businessmen intent on selling their products. Select the lines of communication which seem to be the most effective with the group you wish to reach. A company's advertising and public relations advisors may be of considerable help in preparing effective copy and in selecting the best media which, among other approaches, may include the company magazine, bulletin boards, etc.

## REAPPRAISE PRESENT SYSTEM

Many companies have an established safety committee. The members of this committee have probably played a big part in the development of the emergency plan. Announcements such as bulletins and safety posters are "old hat" to this group and are naturals for giving tips on disaster preparedness. Use this medium as a standard procedure.

Daily newsletters, bulletins, bulletin board postings, sales magazines and any other regular publication should be closely evaluated as possible channels for the dissemination of disaster information. In looking at these items, check carefully the audience to which they are directed. To be effective, these media must carry the proper messages to their specific groups of readers; for example, information appearing in bulletins that are normally directed to management will be prepared differently from that contained in a general employee announcement.

## NEED SUPERVISOR'S ASSISTANCE

Because of their regular duties, supervisory personnel are considered spokesmen for the company, and employees naturally turn to these individuals for information. It is vital that all executives, supervisors, managers, foremen, trade union representatives, and sectionheads be thoroughly acquainted with the emergency plan and give it their full support.

Routinely, almost every company holds meetings and seminars for its supervisory staff. The directors or coordinators of the emergency plan should be given the opportunity to talk with the groups during one of their regular sessions, explaining and selling the disaster program to them. It is essential to work with and gain the support of these people before any attempt is made at general employee education.

It should be pointed out to these personnel that it will be an advantage to everyone concerned if they will hold regular meetings with their people to discuss the plan. Supervisors and foremen should be prepared to provide general instructions as to what to do in an emergency and should be sure their employees are acquainted with the location of and the route to their shelter area and/or disaster station.

## TELL A NEW EMPLOYEE

New employees should be made aware of the existence of the disaster plan as soon as they begin their career with the company. The sooner the individual is acquainted with the program the more important it becomes to him, and the more apt he is to take an active interest in it. Since a disaster can strike anytime, it is necessary that a new employee know what is expected of him in an emergency.

During employment interviews, the interviewer should mention the program; and while evaluating the prospective employee's past training and education, the interviewer should make an effort to determine how he might best fit into the program. Many recently discharged servicemen have had training in firefighting, rescue work, and first aid. Experience such as this is a welcome addition to any disaster plan. Early involvement in the program not only implements the emergency plan but also gives the new employee a real sense of belonging, and makes his adjustment to a new company much smoother.

The immediate supervisor should explain the emergency plan to the new employee. The area warden should also be introduced to him so that he can recognize immediately the person who will be giving directions during an emergency. After these initial steps have been taken, his disaster training may be started. This may be simply a thorough indoctrination into all the details of the disaster plan; or, because of his experience and aptitudes, he may be given intensive instruction in first aid, radiological monitoring or rescue work.

## KEEP TRAINING ROSTER CURRENT

As each phase of an employee's training is completed, the personnel department should be advised. From this source, a roster of disaster workers can be kept, enabling the plan coordinator or director to determine quickly the current manpower situation and make his plans accordingly. In addition, this provides the personnel department with an insight into the employee's interest in the company and in his fellow workers—factors that are normally evaluated when he is in line for promotion.

After plans have been made to utilize existing lines of communication, take a look at the opportunities created by establishment of the preparedness program itself. It may be worthwhile to consider the preparation of a special emergency plan newsletter. This would be published monthly or quarterly and contain information on all phases of the emergency plan. Some examples of its contents are special activities of disaster workers, recent developments in the emergency plan, or pictures of shelters and equipment.

The graduates of all disaster training courses should not only have a competent knowledge of the course material, but also a thorough understanding of the entire emergency plan and how they and their new skills fit into it. To accomplish this, instructors should always attempt to tie in the course with the overall plan. Arrange to have the plan coordinator or other key figure speak to each group during the last class session. He can answer any questions that may come up and lends prominence and importance to the course.

Another effective means of stimulating and retaining interest in the company's emergency plans is to make arrangements for the showing of disaster films. Your local civil preparedness director has available or can obtain some very good movies dealing with emergency planning and operations. They can be shown during the lunch period, rest period, during committee or supervisory meetings, after working hours, or at any other time that may best suit your particular needs. The American Red Cross also has first aid films that can be borrowed for first aid trainees.

## LITERATURE AVAILABLE

Dozens of pamphlets dealing with all phases of civil preparedness are available from the Defense Civil Preparedness Agency or your local civil defense office.

Copies of such literature should be made available to all employees. Distribution with the pay envelope, use of special racks, or handouts in the cafe-

teria lines are ways of getting this material into the employees' hands. A display of disaster equipment in the plant recreation room or in the control center is an additional method of fostering interest in the program.

Continued interest in disaster readiness can be stimulated by encouraging and recognizing civil preparedness activities by employees. Publicize outside achievements in your company magazines and newsletters. Assist the employees in getting their "own house in order." Meet with union representatives to discuss company and community emergency planning in an effort to gain their assistance and support; above all, be sure the top company management is actively and wholeheartedly behind the emergency program.

There are many ways of telling your coworkers the company's emergency plan. Because of organizational and physical differences, methods that work well in some companies may not be the right answer in others. The important point is to recognize that a definite plan is necessary if this selling job is to be effective. Work out a specific "advertising" campaign flexible enough to cover unusual and unforeseen circumstances, yet firm enough to avoid any appearance of haphazardness. Take advantage of ready-made lines of communication, taking care that the message being sent is worded for the best reception by the people for whom it is intended.

Civil preparedness in industry is and will continue to be largely a self-help proposition. For any industrial complex to help itself, all the individuals who make up that complex must be given accurate information on the nature of the threat that faces them and what to do about it.

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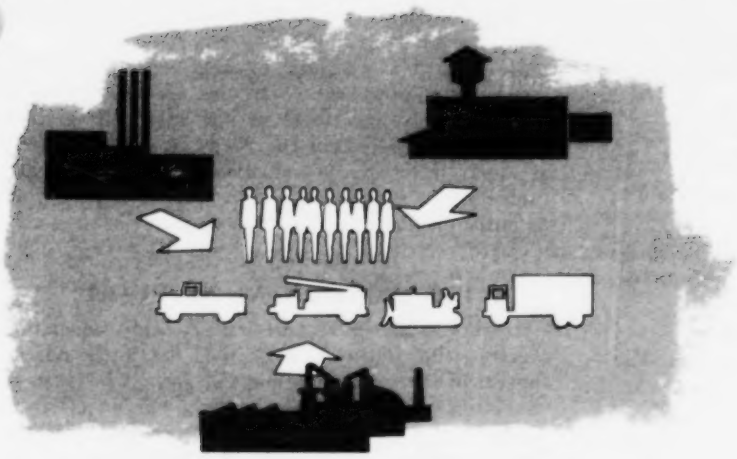

# VIII

# Industrial Mutual Aid Associations for Emergencies

Although many industrial plants have established organizations for self-help in emergencies, few plants can provide for themselves all the resources needed to cope with a major emergency, such as a large industrial accident (e.g., explosion or fire), natural disaster, civil disturbance, or enemy attack. In such an emergency the equipment of the best-prepared plants might be destroyed. In addition, the protective services of the community—such as police, fire, rescue, and medical forces—may not be available to industry because of greater demands elsewhere. In most instances, therefore, industrial plants must rely upon their own self-help organizations and equipment, and join hands with other plants in the community for mutual aid.

Industrial mutual aid associations are relatively new. Twenty years ago only about half a dozen such organizations could be found. Today there are hundreds of industrial mutual aid groups, and the number continues to grow.

Mutual aid is a basic principle in emergency planning. Actually, industrial mutual aid may be considered as an extension of the self-help principle. This is especially true in instances where industries must rely on their own resources—industry helping industry—without the benefit of government or community services.

## COMPANIES CAN'T "GO IT ALONE"

Many companies have gone to great lengths to provide necessary emergency services, including fire, police, rescue, medical, and other self-help groups. However, many also realize that they cannot "go it alone," and have organized to assist one another—to help and be helped—when needed.

Industrial mutual aid association for emergencies is a cooperative organization of industrial firms, business firms, institutions, and similar organizations for the purpose of assisting each other by providing materials, equipment, and personnel as needed to deal with disaster.

The primary purpose of an industrial mutual aid association is to establish a workable emergency organization that will save lives, minimize damage, and insure the continued operation or rapid restoration of damaged member plants. Such an organization can be a most effective force for dealing with sudden calamity in the industrial community. A mutual aid association organizes and expands the self-help capability of an industrial community. It also augments the capacity of existing local government emergency services.

To some degree, all industries rely on local or nearby community police and fire departments, including police and fire communications facilities and many other local department services. But often in a major disaster, such local services may themselves be out of commission, overloaded, or needed elsewhere in the community. In such event a member firm of the association can turn to its fellow members, with assurance that assistance will be forthcoming.

The emergency operations plan of an industrial mutual aid association should be coordinated with the total emergency operations plan of local government.

## INITIAL STEPS IN ORGANIZING

In forming an industrial mutual aid association, the following steps should be taken:

1. Get in touch with the local civil preparedness director. He can provide information, publications, and assistance.
2. Set up an informal steering committee.
3. Review the DCPA publication, "Industrial Mutual Aid Associations for Civil Defense."
4. Seek additional guidance from Department of Defense industrial defense survey officers, State and local industrial emergency planners, or officers of other industrial mutual aid associations.
5. Draft objectives, articles of association, inventory forms, operation methods, necessary committees, and a list of prospective members.
6. Invite a qualified speaker on industrial mutual aid associations, such as the local civil preparedness director or officer of a functioning mutual aid group to address the first organizational meeting.
7. Show the DCPA movie, "Mutual Aid—the 'us' in Industry."
8. Send invitations to prospective members to attend the first organizing meeting—giving place, date, and time. Membership should not be denied because of hypothetical or governmental boundary lines or arbitrary distance. Natural topography and traffic flow patterns should be considered. However, utilities, such as electric power companies, have formed mutual aid associations extending many hundreds of miles and crossing State boundaries and geographical barriers.
9. At the meeting, discuss objectives, organizations, articles of association, inventory forms, committees, and methods of operations. An important purpose of the meeting is to provide information to those who need to transmit facts and recommendations to their management for approval.
10. Elect officers such as president, secretary, and treasurer; and form an operating board.
11. Select a mutual aid coordinator to maintain an inventory of resources and equipment, and to serve as dispatcher of assistance in emergencies. Often, mutual aid associations are organized at the request of local civil preparedness directors. The local civil preparedness director himself or the local police chief or fire chief might serve as the mutual aid coordinator.
12. Appoint operating committees such as Risk Evaluation and Reduction, Manpower and Equipment, Communications, Security and Traffic Control, Public Relations, Special Services and Liaison, Program, Membership and Bylaws, Tests and Exercises, and others as appropriate.
13. Plan for utilizing existing resources. Look at what you now have. Plan use of existing equipment and personnel to serve not only your individual company needs, but the needs of the local group as well. Experience indicates you will usually find enough equipment and personnel among your potential members to serve your needs.

## TOP MANAGEMENT APPROVAL

A successful industrial mutual aid association requires the understanding and the full, official support of the top management of participating firms. Casual endorsement is not enough. For an effective mutual aid organization to emerge and survive, the managements of all participating firms must be in clear agreement on the following principles and policies:

**In-Plant Preparedness.** A strong in-plant self-help organization and program is basic to the industrial mutual aid concept of survival preparedness. If each member plant has attained a satisfactory level of self-help capability, there will be no weak links in the mutual aid chain.

**Reciprocity.** Just as each plant must be prepared to provide self-protection to the maximum extent possible, so it is reasonable to expect it to help in the protection of others. In turn, if it should need sudden aid in a disaster, it should request and expect from other member plants all the assistance they can provide. Aid is rendered only when it is requested by a stricken member plant.

**Reliability.** A mutual aid agreement is a performance pact. Each member plant must stand behind the agreement so that the other members can rely on its help in a time of emergency.

## FINANCIAL SUPPORT

Each member firm must be willing to defray industrial mutual aid association expenses. However, capital outlay and operating costs are usually modest, being mainly for office supplies and emergency medical and welfare supplies. The latter are standard, and can usually be rotated within a plant and used for other purposes. If they should be furnished for another company's emergency use, the association can require that the user replace the equipment or reimburse its cost after the emergency.

When the association's disaster control office is located in a public building (such as a police station), the association has little, if any, maintenance function to perform. In any event, its expenses would be shared among several organizations. In many cases, the normal operating costs of the association are limited to the purchase of a few office supplies.

A standard procedure should be worked out for processing purchase authorizations, disbursements, and receipts, handling funds, and reporting fund balances.

## PLANS AND RESPONSIBILITIES

The basic operating element of a mutual aid association is an operating board. The board should meet regularly to plan and develop emergency procedures. Its first task is to name the mutual aid coordinator and appoint committees. A secretary to keep records of the meetings and handle correspondence should also be elected. Typically, the board consists of the elected officers of the association, the member selected as coordinator, and two other members of the association.

The duties of the operating board include resolving group operating problems; preparing and improving effectiveness of emergency plans; establishing a method of pooling resources, issuing them and controlling their use; and developing training programs so teams from member plants can become familiar with available equipment and damage control techniques, conducting test drills and exercises; and standardizing protective equipment among the member firms.

A small operating headquarters should be established where appropriate files and records can be maintained, and where communications facilities are available for use by the coordinator and his staff during emergency operations.

The principal duties of a mutual aid coordinator include receiving requests for assistance from members, providing or obtaining assistance for members, and maintaining liaison with local governmental agencies.

## SUMMARY

In numerous emergencies and disasters, individual companies have reported that because they had done an effective job of organizing for self-help in emergencies it had not been necessary to call for outside assistance; or because they were a member of an industrial mutual aid association *it was not necessary to call for assistance from local governments.*

It is highly significant that companies in an industrial community, with plants side-by-side, may be highly competitive in the marketplace but thoroughly cooperative in assisting each other to save lives, protect property and plan for total systems viability in time of emergency or disaster.

Be sure to establish your industrial mutual aid association in advance of emergencies. Unfortunately, history indicates that most industrial mutual aid associations have been established *after* a major disaster in which people have been killed and substantial property loss has been experienced.

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# IX

# Industry - Government Cooperation

Since several nations have or will have the capability for manufacturing and delivering nuclear weapons, the threat of enemy nuclear attack is always present though the likelihood at the present is not great.

Paralleling this threat are peacetime disasters of which Americans have become more aware. The Federal government is being called upon for leadership and national guidelines and direction, and State and local governments are being urged to take action. While all these actions are extremely important, the government must have the cooperation and support of the private sector of the economy in order to succeed. Business leaders and their staffs are responding to the demands for cleaner environment, and indeed, have been forerunners in emergency and disaster preparedness.

Since the protection of our citizens from all types of natural disasters, major accidents, environmental hazards, and other threats call for the full mobilization and use of all of the resources of the community, it is imperative that industry and government be partners in preparing for and fighting disasters.

## VOLUNTARY ACTION IN EMERGENCIES

One of the vital protective resources of the community is people, especially leaders and trained personnel. There is need for volunteers to supplement the work of the existing staff of paid government administrators and employees in the day-to-day job of controlling possible peacetime hazards, in the complicated task of planning for disasters, and in the demanding assignment of meeting an emergency.

In order to fill needed positions with trained volunteers, people with all types of backgrounds, skills and education must be located and motivated to actively support the emergency manpower needs of local government.

## INDUSTRIAL ASSISTANCE TO LOCAL GOVERNMENTS

There are approximately 4,500 local governments in the United States, with jurisdiction over some 90 percent of the population, which have civil preparedness systems of some kind. Herein lies the potential for effective action, on a nationwide scale, to attack the newer problems in public safety and to cope more effectively with the older forms of threats to life and property.

In each of those local jurisdictions, industry and business offer the most readily available and highly trained source of volunteer leaders and advisors, program planners, emergency operations personnel, instructors, technicians, and many other types of workers needed for local emergency readiness. Because of the preparations industry must make to survive natural disasters, major disturbances, and accidents, workers are generally organized and highly skilled in procedures required for community emergency planning and operations. Enlightened management can furnish the leadership or urge employees to support local government as volunteers to man

emergency planning and operations posts, act as advisors, or train other people.

Additional skilled volunteers become available for community service in emergencies when businesses and industries expand their own emergency preparedness plans and organize and train more employees as firefighters, police auxiliaries, rescue workers, radiological monitors, shelter managers, and wardens; and as other employees are encouraged to study first aid and medical self-help.

Another way in which industry can assist local government is to allow facilities to be surveyed for possible use as fallout shelter, and to include fallout protection in the design of new or remodelled buildings.

Employees and their families should be provided with informational materials for personal preparedness, and they should be encouraged to volunteer for emergency civil preparedness orientation, and training classes should be held in-plant, or sponsored elsewhere in the community by management.

## THE LEADERSHIP ROLE OF BUSINESS AND INDUSTRY

The local civil preparedness director has many programs to prepare in his working relations with business and industry. He is responsible for providing, or obtaining from Federal and State sources, the advice and guidance needed by industrial, commercial, and institutional facilities in his community for achieving industrial preparedness; he must receive help from business and industry to plan for their role in community's preparedness plans; and he is in a position to help coordinate assistance among plants, or industrial mutual aid associations, or from the community's police or fire services when assistance is needed in a peacetime emergency.

In much of the planning activities, the civil preparedness director needs the support and assistance of all elements within the local area including business, industrial and labor organizations, as well as local Chambers of Commerce and chapters of the National Association of Manufacturers. This relationship generally involves the following:

1. Community civil preparedness planning which recognizes the inherent responsibility of industrial, commercial, and institutional management for the protection of their own facilities, personnel, and resources.

2. Cooperative arrangements so that the various preparations of individual industrial facilities in the community are integrated into one effective overall program.

3. Active participation of industrial, commercial, and institutional and trade union leaders in the community civil preparedness program is essential in order that the resources of their organizations can be made available to support the community effort.

To bring about the support and cooperation needed, it is suggested that the local Chamber of Commerce, the National Association of Manufacturers chapter, and local labor organizations furnish a part-time, paid or volunteer advisor to the staff of the local civil preparedness director; or, if that is not feasible, a member to serve on the director's advisory committee. All business and industrial organizations in the community are urged to join in creating a civil preparedness committee to maintain active liaison with the local civil defense organization. Such cooperation would be advantageous to all concerned as it would:

—Provide a new and necessary service which would increase and strengthen business and industry's role in community affairs; assist local government to carry out its industrial readiness functions in a more efficient and economic manner; and enhance civil preparedness, which has as one of its goals the preservation of our way of life by keeping our economy strong and viable.

—Provide industry and labor leadership in the community. Because most of their members are active in technical and professional societies, local business and industrial organizations would be especially helpful in assisting the local civil preparedness director in recruiting volunteer personnel for the following divisions which could assist local government staff in preparing for and conducting emergency operations:

1. The direction and control division has the responsibility for the management function of operations coordination, communications and warning, and situation analysis which furnishes the data collection and analysis. Situation analysis includes radiological defense, damage assessment, remedial movement, chemical and biological damage assessment, population protection analysis, etc.

2. The public safety division is largely concerned with damage limitation. It is an extension of the normal government public safety departments and includes the fire control, public works and law and order components.

3. The public services division provides *necessary services* to the population. It includes the sheltering, welfare, health and medical components, in addition to management of public shelters, sheltering, preparation of public shelters, training, education, and public information.

4. The resources division is concerned with the effective utilization of local resources in time of emergency. The components in this division include critical supplies, transportation, and work force.

# X

# Basic Plant Leadership Actions for All Major Emergencies

This chapter on basic plant leadership actions for all major emergencies takes up the subject of actions which should be followed by industry to deal with various peacetime emergencies.

The guidance which follows is general in nature and has been developed through experience with disasters over the years. These steps are suggestions only—each plant or group must develop its own checklist, based upon its own particular situation. Also, the checklist is basic to *all* emergencies. Specific steps to deal with a specific disaster must be developed as the need arises.

**Actions by Plant Manager**

Priority Actions by Plant Manager or Other Authorized Official:

Plant Manager, Emergency Coordinator, Security Chief, or other authorized official takes charge of the situation. He sets in motion the following measures to cope with the emergency. He will:

1. Activate the Plant Control Center—Call key staff and set shifts for 24-hour duty, if rerequired.
2. Alert (and if required, mobilize) security, fire, and other plant 'Emergency services' in accordance with checklists of plant "Emergency Services Actions" for the particular type of emergency, such as fire or flood or chemical accident.
3. Alert and inform head of local government or civil preparedness director of the disaster threat or situation at the plant and ask for local government support as appropriate.
4. Brief Plant Control Center staff on emergency situation; review checklists of plant Emergency Services Actions.
5. Obtain initial reports on threatened or actual emergency situation.
6. If required, give employee warning and instructions.
7. Designate Plant Field Chief, to be in charge of all operations at disaster scene, if standing operating procedures do not already establish it.
8. Mobilize employees and other resources to extent required.
9. Insure that Control Center staff establishes and maintains activities logs, as well as records of resources used, and mutual aid or assistance requested and/or provided (including records of financial expenditures).
10. If required, request local civil preparedness director to have local governing body issue declaration of emergency.
11. Coordinate all activities with *local government Emergency Operating Center.* Keep the EOC informed concerning:

    a. Type of disaster.
    b. Time disaster occurred, or threatens to occur.
    c. Actions taken.

d. Plant areas and numbers of people involved.
e. Estimates of casualties and extent of damage.
f. Type and amount of assistance required.

12. Provide continuing direction and coordination:

a. Maintain close surveillance of disaster situation.
b. Rely on Control Center and key field personnel to carry out emergency operations.
c. Call staff meetings, as necessary, for coordination of situation intelligence and decision-making.
d. Continue liaison and coordination with other mutal aid plants involved.

**Actions by Control Center**

Priority Actions by Plant Control Center Emergency Service Operations Staff:

1. Make sure essential staff is on hand: plant manager, emergency coordinator, security, fire, medical, and emergency information chiefs.

2. Test emergency communications to local government EOC, voluntary services, plant security, fire, medical, mutual aid plants, and others, as appropriate.

3. Obtain periodic disaster situation reports, as situation develops.

4. Evaluate situation reports.

5. Determine critical problem areas.

6. Decide on tactics to be used, in accordance with appropriate checklists of plant emergency services actions and employee instructions. For example:

Employee Control, Evacuation, Take Cover, Employee Self-Help Instructions, Plant shutdown, and others.

7. Determine needs for resources, and availability.

8. Determine whether outside assistance is needed. As necessary, request mutual aid, government assistance, military support, etc., according to prearranged procedures. Always make *specific* requests, such as number of men for security, rescue, feeding teams, etc., or *specific* equipment, such as sandbags, pumpers, etc.

9. Maintain accurate logs of the following:
Emergency Service Activities, Estimates of Damage, Manpower and Equipment Utilized, Mutual Aid or Assistance Requested/Provided, Financial Expenditures, Reports Provided, and others.

10. Continue activity logs until emergency is officially terminated.

**Actions to Provide Information**

Priority Actions By Plant Emergency Information Chief:

1. Keep employees informed of the situation, and of actions being taken. Advise employees on what they should or should not do. Issue clear, simple instructions e.g.,

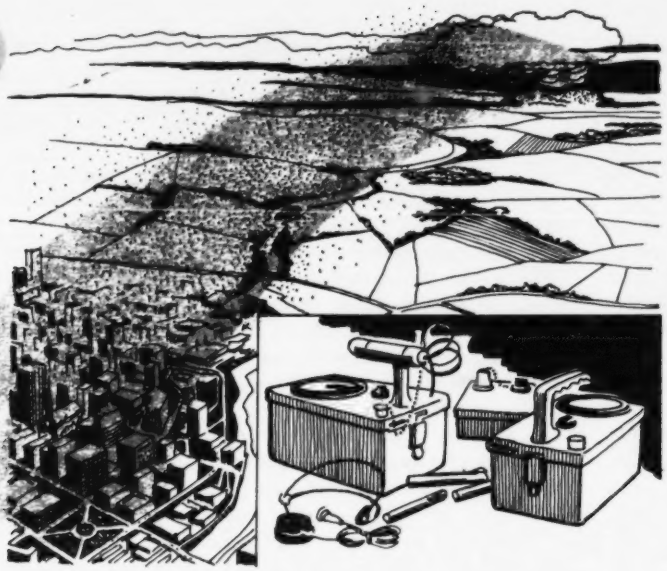
a. Stay away from disaster area.
b. Avoid use of telephone except for emergency request and reports.
c. Monitor local radio or TV for continuing information and instructions.

2. Verify data with services concerned; such as employee movement restrictions with security, etc.

3. Coordinate and issue where feasible and appropriate releases through local government EOC.

4. Answer public inquiries.

5. Avoid blanket appeals for volunteers for assistance; experience shows such appeals are usually not desirable.



# XI

# Basic Emergency Operations Procedures for Nuclear Attack

**Preemergency Planning:** Enemy attack using thermonuclear devices is the ultimate disaster. All other disasters, your plant and your employees, our country and our people prepare for and overcome would be minor incidents compared to this, all other dangers faced could be considered a rehearsal in case of nuclear attack. Following is a checklist of those important industrial preparedness and planning activities:

1. Fix management responsibilities in an emergency.
2. Organize a plant control center.
3. Organize, enlarge, or prepare plans for immediate augmentation of the plant emergency services —police and guard, fire, medical and health, welfare, radiological defense, engineering, rescue emergency information.
4. Plan an in-plant communication system.
5. Plan an employee training and education program.
6. Plan plant emergency shutdown procedures.
7. Plan plant evacuation procedures.
8. Plan with local authorities and emergency services for coordination in emergency.
9. Develop mutual-aid plans with nearby plants.
10. Plan for continuity of management.
11. Take steps for the protection of vital records and documents.
12. With local civil defense director locate, mark and stock fallout shelters in your plant.
13. With local civil defense director plan for regular training and testing of all preparedness activities.

## INTERNATIONAL TENSION

Government authorities may recommend that plant managers take action to increase their civil defense readiness. Such advice *would probably specify* the actions to be taken at various times during the crisis. To assure that the most important increased readiness actions are carried out, the plant manager or other officer-in-charge, would:

1. Assemble department heads, supervisory personnel, plant labor leaders, and plant emergency service chiefs for a briefing on the situation. Review and update plant emergency action plan.
2. Step up employee information program with the following topics as a minimum: (Use information in this section augmented by materials from your local or State civil preparedness office.)

a. The hazard that would be created by radioactive fallout should the United States suffer attack; the nature of radioactive fallout; and how heavy materials (bricks, earth, etc.) provide protection (shielding) against fallout radiation.
b. The local system for getting attack warning to the people, and how to get further informa-



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tion from radio broadcasts and the plant public address system.

c. The plant emergency action plan, including advice for employees on where to go and what to do in case of attack. If there is a local Community Shelter Plan (CSP) which includes your plant, prepare to publish (or republish) it, and to distribute it to employees. If a CSP has not been prepared, develop the best information you can for employees. (Include the location of fallout shelters in the plant; also include advice for employees in areas without shelters, on how to improvise additional fallout protection in buildings with or without basements.) Distribute the foregoing information on "where to go and what to do" when local authorities recommend doing so.

d. Emergency supplies to be taken to shelter areas—especially water, foods requiring no cooking, and special medicines.

e. Care and use of water and food supplies and maintaining sanitation in shelter areas.

f. Emergency care of the sick and injured.

g. The need to follow official instructions.

3. Review civil defense training, particularly of radiological monitors and shelter managers, as well as employee training on fire protection and medical self-help. (Contact local civil defense for assistance in locating qualified instructors.) If such training is already being given, accelerate it.

4. Develop or improve plant control center-facility to the best possible stage; note need for *fallout protection* and other features, emergency power, etc.

5. Exercise alerting, staffing, and operating the plant control center; maintain a 24-hour communications watch, ready to give public warning if required. *Don't* sound sirens or other warning devices, but test warning system components to make sure they will work.

6. Check and improve as required, plans and readiness of personnel and equipment in each of the following areas that apply to your plant: communications, warning, radiological defense, shelter, engineering, rescue, fire prevention and control, security, emergency welfare and health-medical.

## ATTACK WARNING OR NUCLEAR DETONATION

Take the following actions if they have not already been carried out:

1. Sound warning devices, followed by plant public address system broadcasts on employee instructions.

2. Direct key staff to report to plant control center; establish communications with local Civil Defense Emergency Operating Center; check all communications systems, including radio backup; check food, water, fuel and other supplies.

3. Activate shelter management staffs if the plant has fallout shelters.

4. Assist employees staying in the area to reach shelter, if plant has shelters, using security and other plant emergency services.

5. Activate radiological monitoring stations, if available, and direct radiological monitors to check equipment.

6. Monitor warning system and Emergency Broadcast System for information or instructions.

7. Instruct monitoring stations to determine time and initial arrival of fallout (0.5R/hr) and when fallout intensity increases to over 50 R/hr, and time of peak (highest) fallout intensity if any of these events occur. Report foregoing information to local EOC *if requested.* If plant does *not* have radiological monitors and instruments, request local EOC to provide forecasts and warnings of estimated time of fallout arrival as soon as information is available.

8. Continuously assess situation—particularly fallout and fire hazards—and keep employees in shelters advised.

9. Keep record of radiation exposure of plant emergency service personnel who may be called upon to perform emergency missions outdoors. (Ordinarily maximum exposure should not exceed 150 R total exposure in one week, and should if possible be lower.) Check whether dosimeters are available for personnel who may be called on for outdoor work. If dosimeters are not available, calculate time limits for outdoor work so that total exposure limit will not be exceeded. If plant does not have a radiological defense officer who can make this calculation, request assistance from local EOC. Rules of thumb for outdoor operations by crew members with little or no previous exposure to radiation are:

a. If radiation intensity is over 50 R/hr, conduct only the most critical, life-or-death operations (example, evacuating people from buildings threatened by uncontrollable fire).

b. If radiation intensity is between 0.5 and 50 R/hr, essential outdoor operations can be conducted, but emergency service personnel should not receive more than the total radiation exposure previously set and the life-saving payoff of the operations should be great enough to justify the radiation exposure that the emergency service personnel will receive. (Example: A decision could be made to send a crew of 5 members to bring water to a shelter containing 83 people without any water to drink even though the crew members would be exposed to an estimated 110 R total radiation dose.)

10. If critical problems arise that cannot be met with forces or resources available within the plant, request help from the local EOC.

## EMPLOYEE EMERGENCY ACTION

Just as survival plans for plant and personnel under nuclear attack must be prepared and tested in peacetime, so must the instructions on personal protection measures be disseminated and practiced before the alarm is sounded. The time to educate your employees on emergency action for any disaster, especially nuclear attack, is now.

Your State and local civil preparedness agencies can help provide information and training courses, for employees. These materials and courses include:

1. DCPA handbook H-14, "In Time of Emergency," which tells how to take personal preparedness measures for peacetime disasters or nuclear attack. This publication can be ordered free of charge to distribute to all employees.

2. DCPA Newspaper kit K-43 "In Time of Emergency," which contains 10 articles on personal protection measures for reprint in employee publications.

3. DCPA Motion pictures such as "In Time of Emergency," "About Fallout," "A Lady Called Camille."

4. First aid courses in conjunction with the American Red Cross.

5. Medical Self-Help training.

6. Courses in personal and family survival, radiological monitoring, shelter management, fallout protection on the farm, and others are conducted through other Federal agencies such as the HEW Office of Education and USDA Federal Extension Service.

## POST EMERGENCY ACTIONS

Take the following preparatory actions:

1. If advised by local EOC that further attack is unlikely, establish approximate time for releasing employees from shelter, based on calculations on fallout and other hazards affecting the area. If plant has no radiological defense officer able to make these computations, request assistance from local EOC.

2. Assess amount and condition of essential resources available in or near the plant, particularly drinking water, food, gasoline, and other petroleum products and medical supplies.

3. Assess status of utilities in or near the plant (electric power generating plant, sewage treatment plant, etc).

4. Alert emergency personal service (or welfare) teams.

5. Establish security measures for essential resources—food, gasoline and petroleum products, medical supplies, etc.

6. Inform (or reinform) employees regarding consumer rationing arrangements, and how resources will be managed locally, where employees will be housed after release from shelter (e.g., at home if community is undamaged).

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# XII

# Corporate and Plant Disaster Plan Manual

## PLANS MUST BE WRITTEN

Plant emergency operations plans should be put in writing; and they should be developed in coordination with your local civil preparedness director. Each company plan should contain statements of company policy regarding emergency planning, warning and emergency communications procedures, the nature and responsibility of each plant protective service, shelter locations, evacuation routes, emergency equipment, and similar information.

Such documented planning may save the life of a company, or at least thousands of dollars, in the event of disaster.

Some companies have made their disaster plan manual distinctive by using a special color for the cover, or a size different from the usual company manuals. Several companies have used bright red or yellow covers for their disaster manuals to conform to similar colors used for helmets or other emergency equipment.

Most of the manuals contain procedural information for dealing with all types of emergencies such as fire and explosion, sabotage and espionage, enemy attack, hurricanes, tornadoes, floods, snow storms, rain storms, strikes, or riot.

All companies, regardless of size, have developed some system for developing and issuing policies, regulations, instructions, and procedures pertaining to the conduct of their business. Such administrative systems vary from brief statements or letters signed by the head of the company to elaborate coded manuals consisting of many volumes. The kind of system used is of necessity tailored to fit the needs of the individual company. So it is with emergency and disaster plans and procedures. The manuals and other emergency plans issued should be tailored to fit the overall administrative system of the company.

The geographic location of a plant may not indicate planning for extreme weather conditions. However, one severe rainstorm, a flood, or an extraordinarily heavy snowfall, can seriously disrupt production schedules unless advance planning can offset the complications imposed when employees are unable to leave the plant or to report to work. Also, simply because a plant is not situated in or near the tornado belt is no assurance it cannot be struck by a tornado or a freak windstorm.

Therefore, the importance of preparing for all types of emergencies and disasters and including appropriate information on each in the disaster plan manual, cannot be overemphasized.

Prepare and test the emergency plan before it is needed. Generally, it is too late to do so when the disaster strikes.

The value of an industrial disaster plan can be summarized as follows:

1. Provides a written record and means of communicating decisions, directions, and information throughout the organization.
2. Forces clear and thorough planning of the industrial preparedness program.
3. Assures that all procedures fit into an integrated plan toward a common goal.
4. Promotes uniformity, consistency and integration of emergency actions.
5. Assures a permanent record of decisions and acquired knowledge, thus eliminating dependence on individuals who may later change assignments or employment.
6. Provides a means for orientation of new employees into emergency responsibilities, and is a continuing reminder and reference.
7. Creates a medium for coordination of ideas between executives, and for written agreement as to the contents of the industrial civil preparedness manual.
8. Permits management to delegate specific authorities and assures understanding by all individuals regarding assignments.
9. Serves as authority for determining the scope and identifying the cost elements of the company industrial civil preparedness program.
10. Presents a public relations medium for communication to employees, customers, and stockholders.

## OUTLINE OF SUBJECTS

The following can be used as a guide in developing your company disaster plan:

1. Company policy statement regarding civil preparedness planning.
2. Purpose of the emergency plan.
3. Authority for the plan.
4. Types of disasters expected.
5. Facility layout—site plans, floor plans, and utilities layouts.
6. Data on adjacent areas.
7. Assessment of vulnerability to enemy attack.
8. Relationships with local government, including civil preparedness authorities.
9. Relationship with disaster and welfare agencies, including American Red Cross.
10. Principles observed in disaster planning.
11. A message from management to members of the civil preparedness emergency organization.
12. A message from management to all employees, emphasizing individual responsibility.
13. Name of the plant civil preparedness coordinator and deputy.
14. Names of civil preparedness advisory committee members.
15. Emergency organization chart.
16. Description of plant warning system:
    a. How warning is received.
    b. How employees are warned—including warning signals and meaning.
17. The plant emergency control center:
    a. Location.
    b. Equipment.
    c. Operation.
18. The plant emergency communications system:
    a. Internal.
    b. External.
19. Emergency shutdown procedures.
20. Emergency evacuation routes, including directional signs from the workplace to outside of building.
21. Evacuation routes outside the plant.
22. Shelters for employees:
    a. Location of shelters, including floor markings and directional signs from workplace to shelter.
    b. Location of hazardous areas which should be avoided in going to shelter.
23. Care of visitors during emergencies.
24. Organization and composition of self-help or protective groups—to include equipment, manpower, and emergency procedures; and facilities.
    a. Fire.
    b. Police.
    c. Rescue.
    d. Medical and first aid.
    e. Radiological defense.
    f. Emergency Welfare services (registration, feeding, housing, clothing, health-medical, financial assistance, counseling).
    g. Reconnaissance parties.
    h. Damage estimates.
    i. Identification of emergency workers.
25. Protective construction.
26. Protection of equipment and machinery.
27. Deployment plans and procedures.
28. Measures for prevention of sabotage and espionage:
    a. Physical security.
    b. Investigation of applicants and employees.
    c. Safeguarding classified information.
    d. Employee emergency responsibilities.
29. Protection from delayed or unconventional weapons effects.
30. Participation in industrial mutual aid associations for emergencies:
    a. Plant membership.
    b. Resources.
31. Plan for continuity of management.
32. Amendments to bylaws and administrative regulations.
33. Alternative company headquarters in emergencies:
    a. Location.

b. Operations.

34. Employee reporting centers.
35. Recall of personnel.
36. Registration of personnel.
37. Rotation of personnel.
38. Personnel utilization.
39. Inventories of employee secondary skills.
40. Plan for protection of vital records and documents.
41. Emergency financial procedures.
42. Emergency repair and restoration of plant and equipment:
    a. Alternate sites.
    b. Alternate sources of supply.
    c. Stockpiles.
    d. Alternate production methods.
    e. Subcontracting.
43. Utilities repair and restoration.
44. Policy on deconcentration and dispersion of production.
45. Methods of informing employees about the company disaster plan.
46. Program for informing and educating employees in personal preparedness.
47. Policy for informing stockholders and the general public regarding company civil preparedness planning.
48. General support and assistance to local government in community survival planning.
49. Disaster plan testing and exercise.

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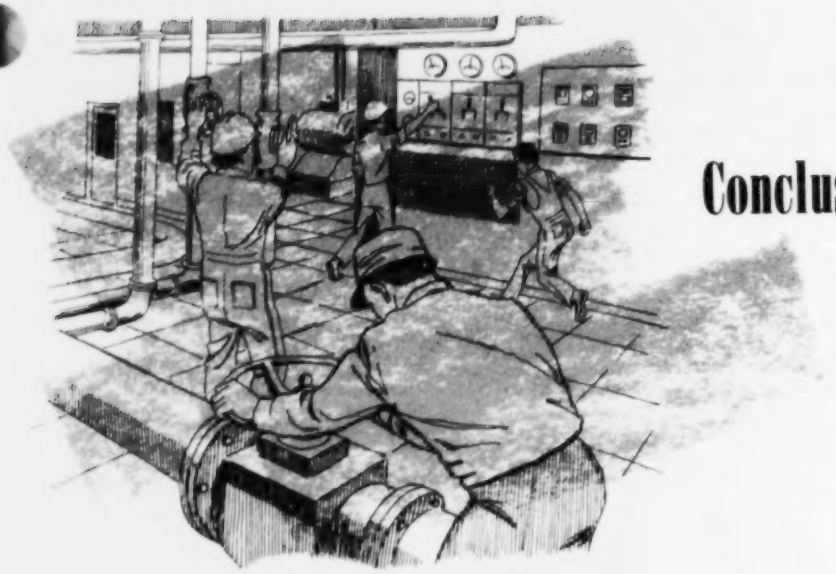

# XIII

# Conclusion -- Testing the Emergency Organization and Plan

The keys to the success of any emergency organization and plan are training and testing.

Training should be designed so that every employee will react automatically in an emergency, and so that each member of the plant emergency services and the Plant Control Center knows his responsibility and has acquired the skill to do this job efficiently.

Testing of the emergency plan and organization should require the actual operation or simulation of every element of the plan in all possible emergency conditions. Records should be maintained so that following the test, deficiencies can be corrected. The exercise should be as realistic as possible, and with as little advance notice and preparation as feasible. A routine test at 10:30 a.m. every third Friday of the month will soon be ignored by most employees.

## COORDINATE WITH LOCAL GOVERNMENT

One of the best times to test the plant emergency plan and organization is in coordination with your local government periodic test exercises. If you wish to schedule a plant emergency test at another time, you should invite your local civil preparedness director and other officials to participate. They may wish to coordinate those elements of their emergency services which are likely to become involved if the situation you are testing should become a reality.

These exercises offer industry one of the best opportunities for community involvement and service. By rehearsing their emergency plan in cooperation with local government plant management's concern for the well-being of the whole community is emphasized. It also gives plant emergency services members the pride of being a part of a larger "team."

The Federal Government has repeatedly encouraged local civil preparedness agencies to include industrial plants in their communities in local emergency exercises. In many ways, the emergency procedures within an industrial plant may be as comprehensive as those of its community, and the plant emergency plan should be developed in cooperation with, and linked directly to the community operational plan.

## DO IT NOW

Most of the time, following a major accident at a plant or the occurrence of a natural disaster which has severely affected the operation of a plant, safety and emergency planners rush to meet and analyze the possible causes and failures involved, and plan for methods of preventing this from happening in the future. This is normal procedure in disaster control and planning activities. It is the obvious time to discover the bugs in the emergency plan and organization.

But the best time to uncover the flaws and deficiencies in the emergency plan and organization

is before, not after, a disaster. It is unfortunate, if not unthinkable, that the bugs were not discovered sooner and adjustments made in the emergency plan which could have saved lives or prevented the cause of damage, or at least have resulted in a smaller loss. Don't wait for a "fire proof building" to burn down to test your emergency plans for you, or to cause you to correct your plans. This type of testing could be costly and could put you out of business.

**Appendix A**

## SUGGESTED AMENDMENT TO THE MODEL BUSINESS CORPORATION ACT

**BY-LAWS AND OTHER POWERS IN EMERGENCY**—The board of directors of any corporation may adopt emergency by-laws, subject to repeal or change by action of the stockholders, which shall, notwithstanding any different provision elsewhere in this act or in the articles of incorporation or by-laws, be operative during any emergency resulting from an attack on the United States or any nuclear or atomic disaster. The emergency by-laws may make any provision that may be practical and necessary for the circumstances of the emergency, including provisions that:

(a) A meeting of the board of directors may be called by any officer or director in such manner and under such conditions as shall be prescribed in the emergency by-laws;

(b) The director or directors in attendance at the meeting, or any greater number fixed by the emergency by-laws, shall constitute a quorum; and

(c) The officers or other persons designated on a list approved by the board of directors before the emergency, or in such order of priority and subject to such conditions and for such period of time (not longer than reasonably necessary after the termination of the emergency) as may be provided in the emergency by-laws or in the resolution approving the list, shall, to the extent required to provide a quorum at any meeting of the board of directors, be deemed directors for such meeting.

The board of directors, either before or during any such emergency, may provide, and from time to time modify, lines of succession in the event that during such an emergency any or all officers or agents of the corporation shall for any reason be rendered incapable of discharging their duties.

The board of directors, either before or during any such emergency, may, effective in the emergency, change the head office or designate several alternative head offices or regional offices, or authorize the officer so to do.

No officer, director, or employee acting in accordance with any emergency by-laws shall be liable except for willful misconduct.

To the extent not inconsistent with any emergency by-laws so adopted, the by-laws of the corporation shall remain in effect during any emergency and upon its termination the emergency by-laws shall cease to be operative.

Unless otherwise provided in emergency by-laws, notice of any meeting of the board of directors during such an emergency may be given only to such of the directors as it may be feasible to reach at the time and by such means as may be feasible at the time, including publication or radio.

To the extent required to constitute a quorum at any meeting of the board of directors during such an emergency, the officers of the corporation who are present shall unless otherwise provided in emergency by-laws, be deemed, in order of rank and within the same rank in order of seniority, directors for such meeting.

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